

# G7

## SOUND & VIBRATION ANALYSER

**(draft version)**

### USER'S MANUAL



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WARSAW, August 2007*



**Notice:** *This user's manual presents the software revision named 6.03 / 6.03.03 (cf. the description of the **UNIT LABEL** position of the **DISPLAY** list). The succeeding software revisions (marked with the bigger numbers) can slightly change the view of some displays presented in the text of the manual.*

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## 1 INTRODUCTION

The **G7** is digital, Type 1 sound & vibration level meter along with analyser. The instrument is intended to general acoustic and vibration measurements, environmental monitoring, occupational health and safety monitoring.

Three acoustic or vibration profiles allow parallel measurements with independently defined filters and RMS detector time constants. Each profile provides significant number of results (like **Leq**, **LMax**, **LMin**, **LPeak**, **Spl**, **SEL** in the case of sound measurements or **RMS**, **PEAK**, **VDV**, **MTVV** in the case of vibration measurements). Advanced time history logging for each profile provides complete information about measured signal in non-volatile 32 MB internal memory or external USB Memory Stick and can be easily downloaded to any PC using the USB interface and SvanPC+ software.

All required weighting filters (e.g.: **A**, **C**, **Wk**, **Wc**, **Wh**) including the latest ISO 2631-1&2 standard are available with this instrument. The RMQ detector enables direct measurement of the Vibration Dose Value (**VDV**).

Using computational power of its digital signal processor the **G7** instrument can, simultaneously to the meter mode, perform real time **1/1 OCTAVE** or **1/3 OCTAVE** analysis including statistical calculations, acoustic dose measurements, **FFT** analysis and **Reverberation Time** measurements. The time history logging of **1/1 OCTAVE**, **1/3 OCTAVE** and **FFT** analysis is provided. The time domain signal recording on the external USB memory stick is also available as an option.

Fast USB 1.1 interface (12 MHz) creates real time link for the PC "front-end" application of the **G7** instrument. The **HOST USB** functionality is also available. The USB HOST controller installed in the instrument enables the user to connect to this meter the USB memory sticks, USB hard disks, USB printers etc. A PC using the optional interfaces (RS 232 or IrDA) can also remotely control the instrument. The measurement results can be downloaded to PC using all mentioned above interfaces. The instrument is powered from four AA standard or rechargeable batteries (i.e. NiMH - separate charger is required). The powering of the instrument from the External DC power source or the USB interface is also provided. Robust and lightweight design accomplishes the exceptional features of this new generation instrument.

### 1.1 G7 as Sound Level Meter & Analyser

- noise measurements (**SPL**, **LEQ**, **SEL**, **Lden**, **Ltm3**, **Ltm5** and statistics) with Type 1 IEC 61672:2002 accuracy in the frequency range 10 Hz ÷ 20 kHz with **ACO 7052H** microphone
- parallel **IMPULSE**, **FAST** and **SLOW** detectors for the measurements with **A**, **C** or **Z** filters
- two measurement ranges 24 dB RMS(A) ÷ 118 dB PEAK (**LOW**)  
and 44 dB RMS(A) ÷ 141 dB PEAK (**HIGH**)
- **1/1 OCTAVE** and **1/3 OCTAVE** real time analysis (optional) - 15 filters with centre frequencies 1 Hz ÷ 16 kHz, Type 1 – IEC 1260 and 45 filters with centre frequencies 0.8 Hz ÷ 20 kHz, Type 1 – IEC 1260
- **RT 60** measurements (option)
- **FFT** real time analysis - 1920 lines in up to 22.4 kHz band (option)
- **DOSE METER** measurements

## 1.2 G7 as Vibration Meter & Analyser

- General vibration measurements (acceleration, velocity and displacement) and optionally HVM meeting ISO 8041:2005 and ISO 10816-1 standards in the frequency range depends on the parameters of the attached accelerometer, i.e. with DYTRAN 3185D general purpose transducer is equal to 2 Hz ÷ 20 kHz
- parallel **RMS**, **VDV**, **MTVV** (or **MAX**), **PEAK**, **PEAK-PEAK** measurements
- **Z**, **HP1**, **HP3**, **HP10**, **KB**, **Wk**, **Wd**, **Wc**, **Wj**, **Wm**, **Wh**, **Wg**, **Wb** weighting filters
- **1/1 OCTAVE** and **1/3 OCTAVE** real time analysis (optional) - 15 filters with centre frequencies 1 Hz ÷ 16 kHz, Type 1 – IEC 1260 and 45 filters with centre frequencies 0.8 Hz ÷ 20 kHz, Type 1 – IEC 1260
- optional **FFT** spectra calculation (1920 lines in real time up to 22.4 kHz with Hanning, rectangle, flat top or Kaiser-Bessel window and linear averaging) parallel to the **VLM** operation

## 1.3 General features of G7

- Advanced **Data Logger** including spectra's logging on the **USB Memory Stick** providing almost unlimited logging capacity
- Time domain signal recording (option)
- Advanced trigger and alarm functions
- **USB 1.1 Host & Client interface** (real time PC "front end" application supported)
- **RS 232** and **IrDA** interfaces (options)
- Integration time programmable up to **24 h**
- Power supply by **four AA** rechargeable or standard **batteries**
- Hand held, light weight and robust case
- Easy in use

## 1.4 Accessories included

- **7052H** - prepolarised (polarisation 0 V) ½" microphone with nominal sensitivity 22 mV/Pa
- **SV 12L** - microphone preamplifier
- **SC 16** - USB 1.1 cable
- **SC 09A** - AC output (Lemo 1 to BNC) cable
- **four AA** batteries
- **SvanPC+** for windows 2000/XP software

## 1.5 Accessories available

- **SA 17A** - external battery pack
- **SA 22** - windscreen

- **SC 26** - extension (3 m) cable TNC (plug) to TNC (socket)
- **SV 25** - dosimeter microphone with integrated preamplifier and cable
- **SA 43** - carrying case for instrument and accessories
- **SA 45** - carrying case for instrument and accessories (waterproof)
- **SA 46** - carrying belt-bag for instrument (leather)
- **SA 47** - carrying bag for instrument and accessories (fabric material)
- **SV 55** - RS 232 option for the instrument
- **SV 56** - IrDA interface option

## 1.6 Software options available

- **G7** - Type 1 Sound & Vibration Analyser including 1/1 octave analyser
- **G7\_2** - 1/3 octave analysis option for the G7
- **G7\_4** - FFT analysis option for the G7
- **G7\_5** - RT60 option for G7
- **G7\_9** - Human Vibration filters option
- **G7\_10** - Dosimeter option for the G7 (without **SV 25** microphone)
- **G7\_15** - Time domain signal recording (to the USB Flash Disk: \*.srt or \*.wav format)



**Notice:** The software options can be purchased in any time as only the introduction of the special code is required for their activation.

## 1.7 Current list of G7 options and accessories

The current list of G7 options and accessories are presented below:

G7	Type 1 Sound & Vibration Analyser including 1/1 octave analyser
G7_2	1/3 octave analysis option for the G7
G7_4	FFT analysis option for the G7
G7_5	RT60 option for G7
G7_9	Human Vibration filters option
G7_10	Dosimeter option for the G7 (without SV 25 microphone)
G7_15	Time domain signal recording (to the USB Flash Disk: *.srt or *.wav format)
SV 55	RS232 interface option
SV 56	IrDA interface option
SA 22	Windscreen for 1/2" microphone

- SA 43            Carrying case for instrument and accessories
- SA 45            Carrying case for instrument and accessories (waterproof)
- SA 46            Carrying belt-bag for instrument (leather)
- SA 47            Carrying bag for instrument and accessories (fabric material)

G7 - accessories included:

7052H prepolarised microphone, SV 12L preamplifier, SC 16 cable, SC 09A cable,  
SA 22 windscreen, SvanPC for Windows 2000/XP software



## 2 MANUAL CONTROL OF THE INSTRUMENT

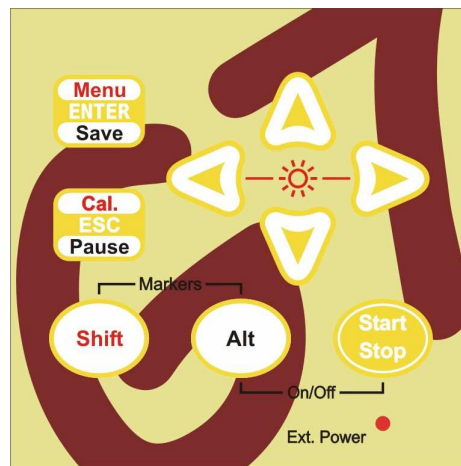
The control of the instrument is developed in the fully conversational way. The user can operate the instrument by selecting the proper position from the MENU list. Thanks to that, the number of the control push-buttons of the instrument is reduced to nine.

### 2.1 Control push-buttons on the front panel

On the front panel of the instrument, there are located the following control push-buttons:

1. <ENTER>, (<MENU>), [<SAVE>],
2. <ESC>, (<CAL>), [<PAUSE>],
3. <SHIFT>, [Markers]
4. <ALT>, [Markers]
5. <▲>,
6. <◀>,
7. <▶>,
8. <▼>,
9. <START / STOP>.

The name given in (...) brackets denotes the second push-button function which is available after pressing it in conjunction (or in sequence) with the <SHIFT> push-button. For the first two push-buttons the name given in square brackets [...] denotes also the third push-button function which is available after pressing it in conjunction (or in sequence) with the <ALT> push-button.



Control push-buttons of the G7 instrument

#### <SHIFT>

The second function of a push-button (written in red colour on a push-button) can be used when the <SHIFT> push-button is pressed. This push-button can be used in two different ways:

- as **SHIFT** in the keyboard (e.g. while typing the filename); both <SHIFT> and the second push-button **must be pressed in parallel**;
- as **2nd Fun**; this push-button can **be pressed and released before pressing the second one or pressed in parallel** (while operating in “2nd Fun” mode, see the following notice) with the second push-button.

The **<SHIFT>** push-button pressed in conjunction with the **<ALT>** one enables the user to enter the **Markers** on the plots during the measurement.



**Notice:** The operation of this push-button can be set as the “**Shift**” mode or the “**2nd Fun.**” mode in the **SHIFT** position (path: MENU / SETUP /SHIFT MODE / SHIFT) - see description of the **SETUP** list.

#### **<ALT>**

This push-button enables one to choose the third push-button function in case of [**<SAVE>**] and [**<PAUSE>**] push-buttons. In order to select the third function the user must press the **<ALT>** and the second push-button simultaneously.

The **<ALT>** push-button pressed together with the **<SHIFT>** one enables the user to enter the **Markers** on the plots during the measurement.



**Notice:** The simultaneous pressing of the **<ALT>** and **<START / STOP>** push-buttons switches the instrument on and off.

#### **<START / STOP>**

This push-button enables one to start the measurement process, when the instrument is not measuring or to stop it, when the instrument is in course of the measurement. It is also possible to set such mode of this push-button, in which in order to start or stop the measurements the user has to press it simultaneously with the **<SHIFT>** one.



**Notice:** The change of the **<START / STOP>** push-button mode is performed in the **SHIFT MODE** window of the **SETUP** list (see description of the **SETUP** list).

#### **<ENTER>**

This push-button enables one to enter the selected operation mode or to confirm the control options. Some additional functions of this push-button will be described in the following chapters of this manual.

#### **(<MENU>)**

This push-button (pressed together with the **<SHIFT>** one) enables the user to enter the main list containing six sub-lists: **FUNCTION**, **INPUT**, **DISPLAY**, **FILE**, **REPORT** and **SETUP**. Each of the mentioned above sub-lists consists of the sub-lists, elements and data windows. These main sub-lists will be described in details in the following chapters of the manual. Double pressed **<MENU>** push-button enters the list containing eight last opened sub-lists. It often speeds up the control of the instrument as the user has the faster access to the frequently used sub-lists.

**[<SAVE>]**

This push-button (pressed together with the **<ALT>** one) enables the user to save measurement results as a file in the internal instrument's memory or on the USB memory stick. There are two available functions: **SAVE NEXT** - save a file with the name increased by one (e.g. 02JAN0, 02JAN1, 02JAN3) and **SAVE** - save a file with the edited name.

**<ESC>**

This push-button closes the control lists, sub-lists or windows. It acts in opposite to the **<ENTER>** push-button. When the window is closed pressing the **<ESC>** push-button, any changes made in it are ignored in almost all cases.

**[(CAL)]**

This push-button (pressed together with the **<SHIFT>** one) enters the **CALIBRATION** sub-list in which the user can enter one of the available sub-lists (**BY SENSITIVITY**, **BY MEASUREMENT**, **LAST CALIBRATION** and **TEDS**).

**[<PAUSE>]**

This push-button enables one to break the measurement process temporarily. The subsequent pressing of the **<PAUSE>** push-button deletes the measurement results from the last one second. The indicator of the measurement time is counted down after each pressing and the measurement result from the previous second appears on the display. Up to fifteen last seconds of the measurement can be cancelled in this way.

**<<>, <>>**

These push-buttons enable one, in particular, to:

- select the options in an active position in the "horizontal direction" (e.g. filter **Z**, **A** or **C**, Integration period: **1s**, **2s**, **3s**, ... etc.)
- select the measurement result to be displayed (e.g. **PEAK**, **MAX**, **MIN**, etc.) in one profile and **3 PROFILES** modes of result's presentation)
- control the cursor in **LOGGER** and **STATISTICS** modes of result's presentation
- select the position of the character in the text edition (i.e. in the **FILE NAME** menu)
- switch on/ off the **BACKLIGHT** of the display (**<<>** + **<>>** pressed together)
- activate markers 2 and 3

**(<<>, <>>)**

The **<<>**, **<>>** push-buttons pressed in conjunction (or in sequence) with the **<SHIFT>** enable one, in particular, to:

- speed up the changing of the numerical values of the parameters (i.e. the step is increased from 1 to 10 in the setting of **START DELAY** - path: **MENU / INPUT / MEASUREMENT SETUP / START DELAY**)
- insert or delete a character in the text edition modes

- change the statistical class (the number displayed after the letter **L**) in one profile and **3 PROFILES** modes of result's presentation

Some other possible reactions of the instrument on the pressing of these push-buttons will be described in details in the following chapters.

#### <▲>, <▼>

The <▲>, <▼> push-buttons enable one, in particular, to:

- change the mode of result's presentation
- select the proper character from the list in the text edition mode
- switch the active sub-list in a list
- programme the Real Time Clock (**RTC**) and **TIMER**
- activate markers 1 and 4

Some other possible reactions of the instrument on the pressing of these push-buttons will be described in details in the following chapters.

#### (<▲>, <▼>)

The <▲>, <▼> push-buttons pressed in conjunction (or in sequence) with the <SHIFT> enable one, in particular, to:

- change the relation between the Y-axis and X-axis of all plots presented on the screen
- switch the profiles in one profile and **STATISTICS** modes of result's presentation
- switch the active profile in **3 PROFILES** mode of result's presentation

Some other possible reactions of the instrument on the pressing of these push-buttons will be described in details in the following chapters.

### [Markers]

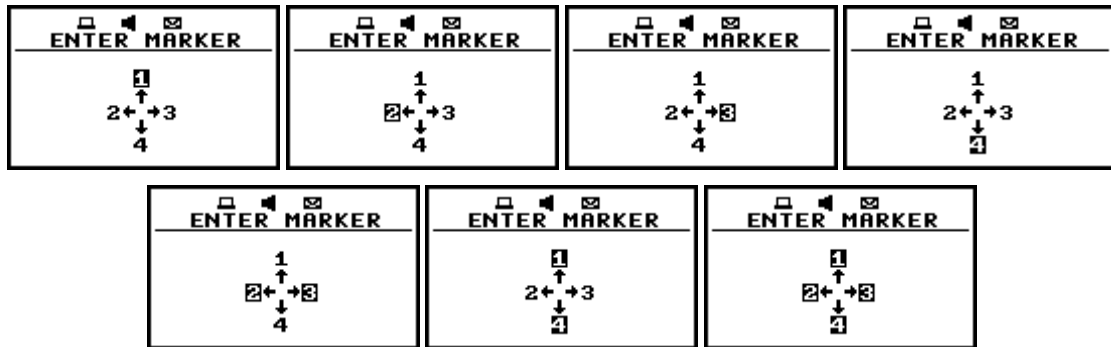
The **Markers** enable the user to mark special events, which occurred during the performed measurements (i.e. the airplane flight, the dog's barking, the train's drive etc.). The logger has to be switched on (*path: MENU / INPUT / MEASUREMENT SETUP / LOGGER On*) in order to activate the markers and one or more logger options (**LOGGER PEAK**, **LOGGER MAX**, **LOGGER MIN**, **LOGGER RMS** for sound measurements or **LOGGER PEAK**, **LOGGER P-P**, **LOGGER MAX**, **LOGGER RMS** for vibration measurements) in profiles have to be chosen (*path: MENU / INPUT / PROFILE x*). In order to enter the marker the user must press <SHIFT> and <ALT> push-buttons simultaneously during the measurement. The **ENTER MARKER** window opens and there are four available marker numbers. To choose marker number 1 the user must press <▲> push button (number 2 - <◀>, number 3 <▶> and number 4 - <▼>).

The **ENTER MARKER** window closes automatically and chosen marker is activated (after pressing <SHIFT> + <ALT> again active marker number will be highlighted). In order to switch off the marker, the user has to open the **ENTER MARKER** window and press this push-button, which refers to the marker to be switched off.

The current state of the markers is indicated in the logger's file (cf. App. B for details) and can be used to show them using dedicated presentation software.

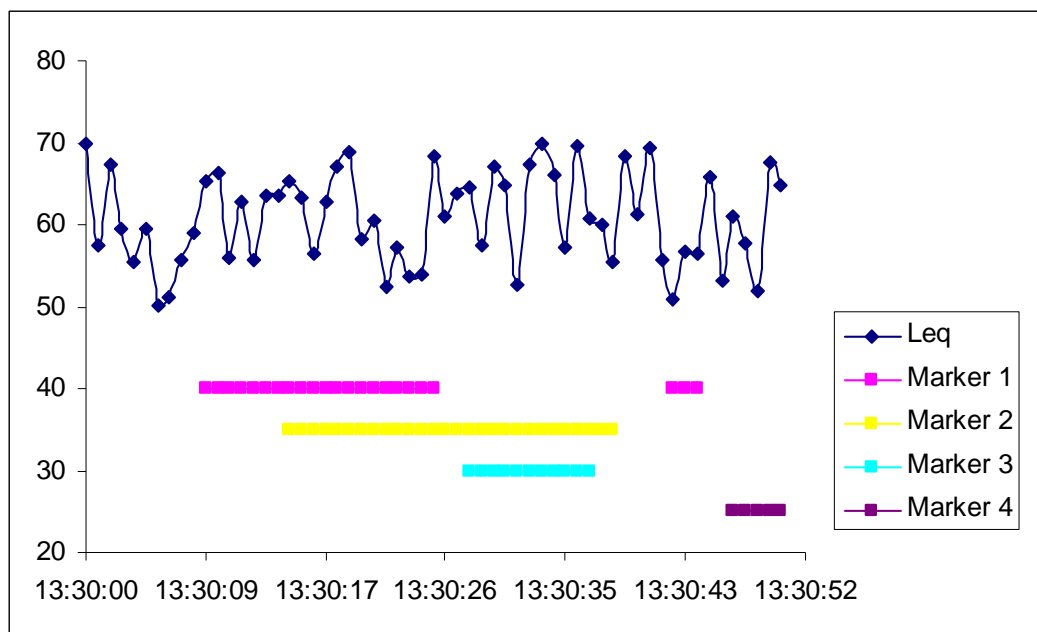


Display with the “MARKERS” (after pressing <ALT> and <SHIFT> together)



Displays with the activated markers

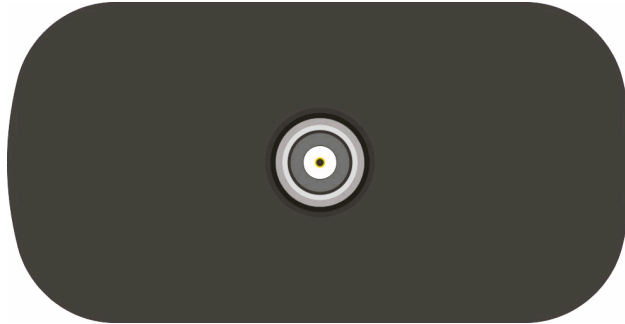
The exemplary presentation of the markers on the time history plot is shown below (to view a plot with markers the user has to transfer data to the proper software).



Time history plot with the indication of the active markers

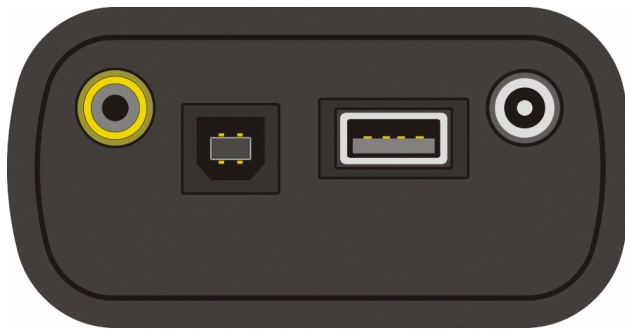
## 2.2 Input and output sockets of the instrument

The measurement input, called **Input** is placed in the centre of the instrument's top cover. It is TNC socket. The microphone preamplifier **SV 12L** has the proper plug in with the screw. The accelerometers have to be connected to the instrument using also the TNC connector. After plug in the preamplifier or the accelerometer to the measurement input, the screw should be twisted to the light resistance. The full description of the signals connected to the sockets is given in the Appendix C.



Top cover of the G7 instrument in 1:1 scale

In the bottom cover there are four sockets, placed from the right to the left as follows: **Ext. Pow.**, **USB Host**, **USB Device (USB Client)** and **Ext. I/O**.



Bottom cover of the G7 instrument in 1:1 scale

The **USB Device** 1.1 interface is the serial interface working with 12 MHz clock. Thanks to its speed, it is widely used in all PC. In the instrument, the standard 4-pins socket is used described in details in Appendix C.

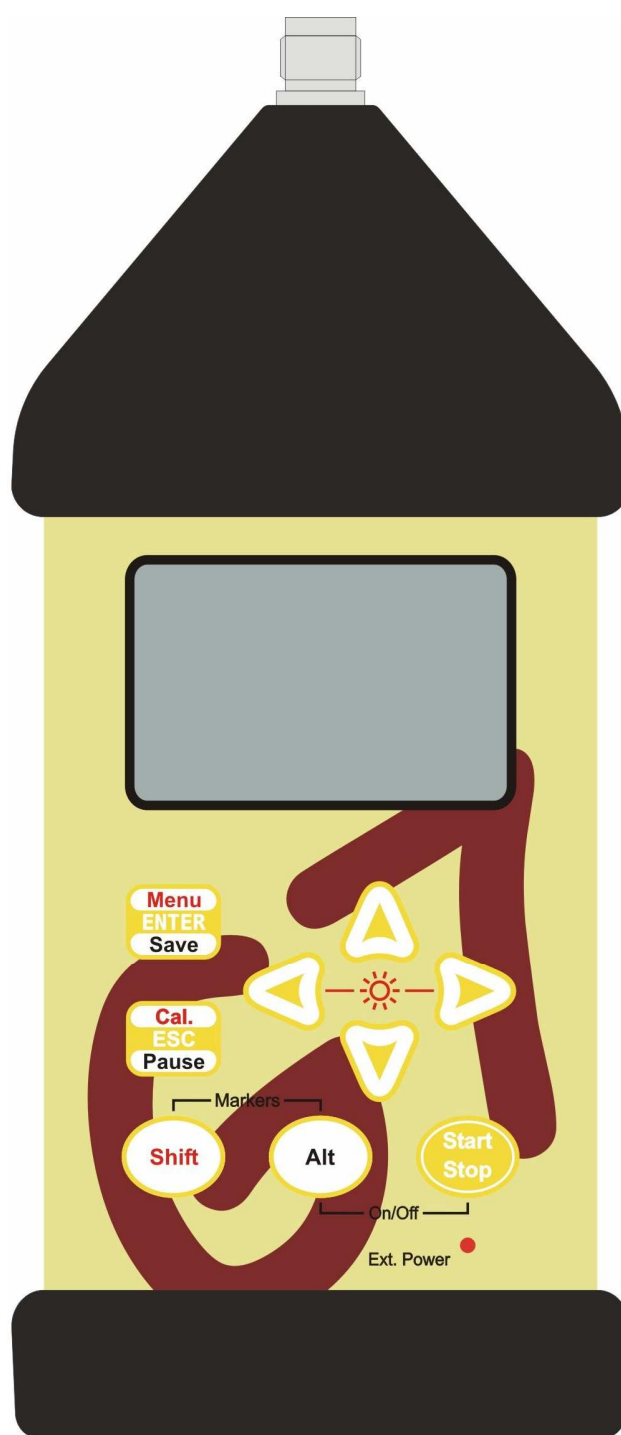
The **USB Host** interface can be used to connect the external USB Memory Stick or USB hard disk, enabling the device to register virtually infinite sequence of measurement results.

The additional multi purpose input / output socket, called **Ext. I/O**, is a RCA Jack ("Cinch") socket. On this socket, in the case when the Analogue Output functionality is selected, the signal from the input of the analogue / digital converter (before the correction) is available. This signal can be registered using magnetic recorder or observed on the oscilloscope. The Digital Input as another functionality serves as the external trigger, while the Digital Output is used to generate the trigger pulse or alarm pulse from the instrument.

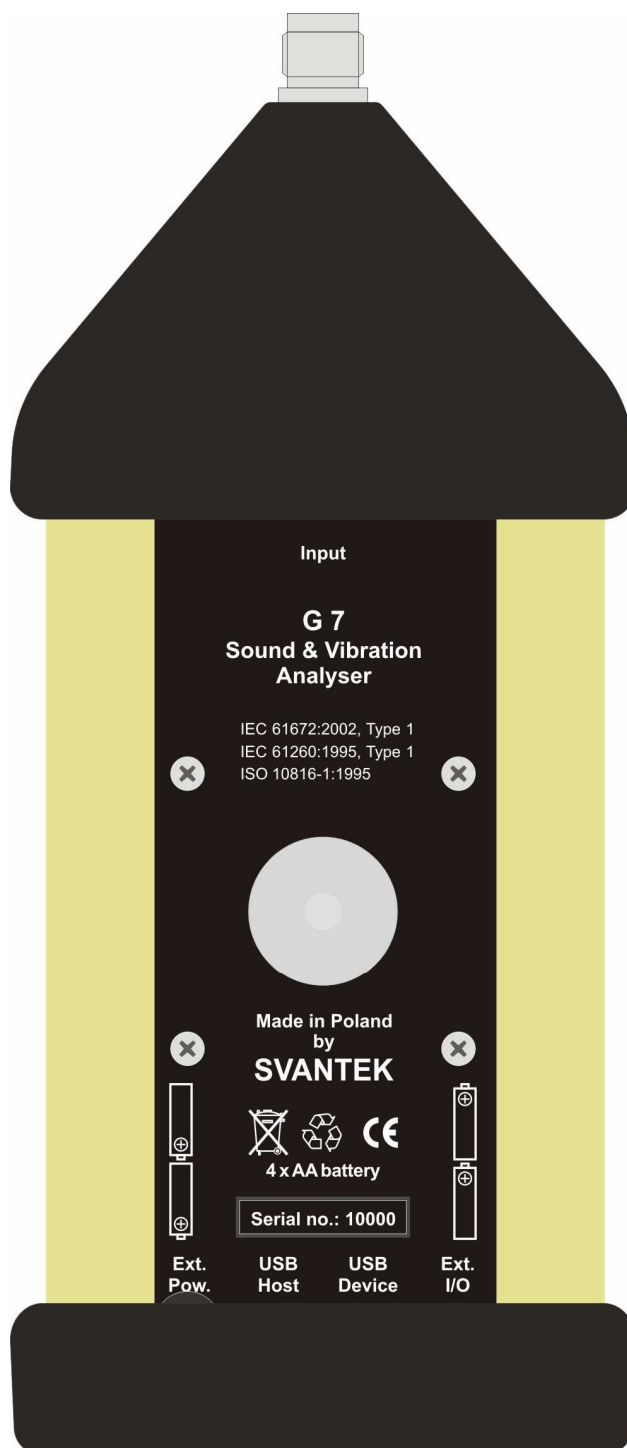
To the **Ext. Pow.** socket located on the bottom cover of the instrument, dedicated for the connector type 5.5 / 2.1 mm, the user can connect the external power (110 V / 220 V mains) adapter. The instrument can be charged from the external DC source (from 6 V to 15 V). The current consumption depends on the voltage of the power supplier.



**Notice:** Switch the power off before connecting the instrument to any other device (e.g. a printer or a Personal Computer).



Front panel of the G7 instrument in 1:1 scale



Rear panel of the G7 instrument in 1:1 scale



### 3 SETTING THE INSTRUMENT

In order to perform the measurements using the instrument the user has only to plug-in the preamplifier with the microphone or the proper transducer and to switch the power on.



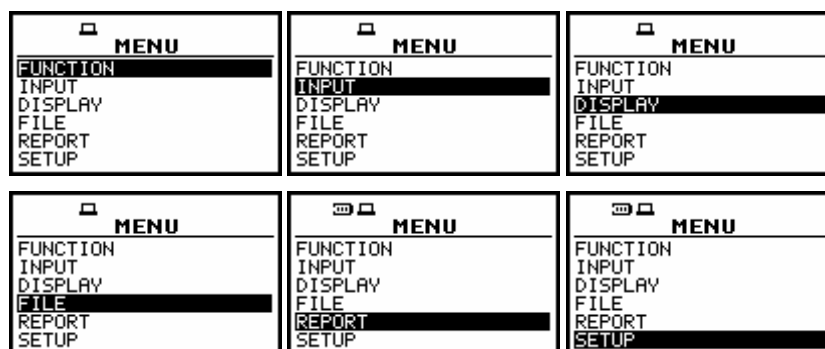
**Notice:** The user has to press the <ALT> and <START / STOP> push-buttons in parallel in order to switch the power On/Off.

#### 3.1 Basis of the instrument's control

The instrument is controlled by means of nine push-buttons of the keyboard. Using these push-buttons one can access all available functions. The functions are placed in the system of lists and sub-lists. The main list contains the headers of **six lists**, which also contain sub-lists or positions (elements). The main list is opened after pressing the <MENU> push-button. This list contains the following lists: **FUNCTION**, **INPUT**, **DISPLAY**, **FILE**, **REPORT** and **SETUP**. The elements of each list are described in details in Chapters 4 ÷ 9. Only one list can be accessed at a time, the one which name is highlighted (displayed inversely). The change of the highlighted line is done after pressing the <▲>, <▼> (or <◀>, <▶>) push-buttons.

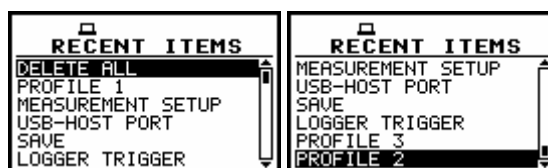


**Notice:** The number of the attempts for the access code entering is limited. After three unsuccessful essays, the possibility is blocked.



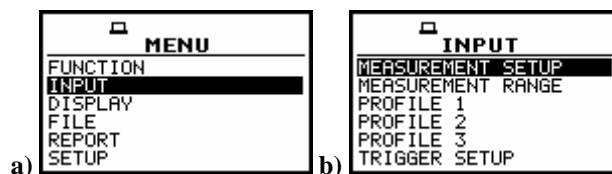
Displays with the highlighted elements of the main list

After double pressing of the <MENU> push-button the scrolled list of recently accessed menu items appears on the display. The example of this list is presented below. Such solution enables one to access the most frequently used lists quickly, without the necessity of passing the whole path.



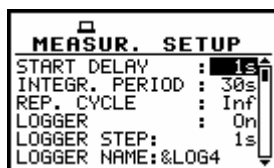
Display with the recently accessed menu items (after double pressing of the <MENU> push-button)

After the selection of the desired list (the  $\langle \blacktriangle \rangle$  or  $\langle \blacktriangledown \rangle$  push-buttons), the user has to press the  $\langle \text{ENTER} \rangle$  push-button in order to enter it. After this new sub-lists, positions (elements) or various data specification appear on the display.



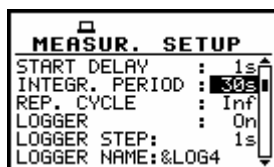
Displays with the main list (a) and the elements of the INPUT list (b)

Next pressing of the  $\langle \text{ENTER} \rangle$  push-button enables one to access mentioned above sub-lists.



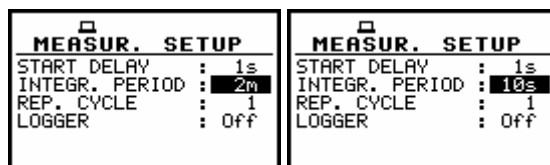
MEASUREMENT SETUP window opened (path: MENU / INPUT / MEASUREMENT SETUP)

The desired position of a list is accessed after pressing the  $\langle \blacktriangle \rangle$  or  $\langle \blacktriangledown \rangle$  push-button.



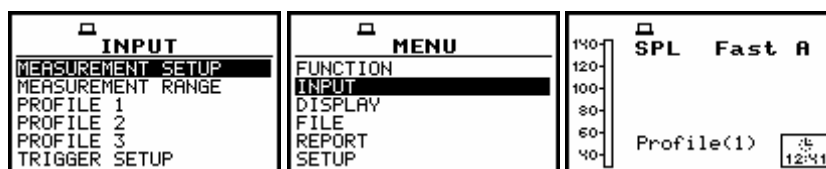
MEASUREMENT SETUP window; the INTEGR. PERIOD position accessible

The change of the value in a selected position is performed by pressing the  $\langle \blacktriangleleft \rangle$  or  $\langle \blacktriangleright \rangle$  push-buttons.



Displays with the accessed INTEGR. PERIOD position after pressing the  $\langle \blacktriangleleft \rangle$  or  $\langle \blacktriangleright \rangle$  push-buttons, respectively

The  $\langle \text{ENTER} \rangle$  push-button is used for the confirmation of the selection in a position and for closing the opened sub-list. The sub-list is closed ignoring any changes made in a sub-list by pressing the  $\langle \text{ESC} \rangle$  push-button.



Displays after three consecutive pressing of the  $\langle \text{ESC} \rangle$  push-button from the MEASUR. SETUP sub-list

As it was mentioned, some of the sub-lists end with the windows informing the user about the state of the instrument, available memory, not existing files or loggers, standards fulfilled by the unit, etc. In order to close such window the user has to press the  $\langle \text{ESC} \rangle$  push-button.



Displays during and after the accessing the FREE SPACE window (path: MENU / FILE / FREE SPACE)

In the instrument, there are also windows, which are used for entering text (i.e. the name of the file, the header for the printed reports from the measurements).



Displays during the edition of the text, which has to be printed as a header in the measurement reports (path: MENU / REPORT / TITLE)

Below the structure of the elements of the main list is presented. The more detailed description of the **FUNCTION**, **INPUT**, **DISPLAY**, **FILE**, **REPORT** and **SETUP** lists is given in the following chapters.

❖ **FUNCTION** (one of the main lists available after pressing the <MENU> push-button)

➤ **MODE**

- **VIBRATION METER**; available values: [ ] / [\*]
- **SOUND METER**; available values: [ ] / [\*]

➤ **MEASUREMENT FUNCTION** (sub-list)

- **LEVEL METER**; available values: [ ] / [\*]
- **1/1 OCTAVE**; available values: [ ] / [\*]
- **1/3 OCTAVE**; available values: [ ] / [\*]
- **FFT**; available values: [ ] / [\*]
- **RT60**; (function available only in sound meter mode) available values: [ ] / [\*]
- **DOSE METER**; (function available only in sound meter mode) available values: [ ] / [\*]

➤ **CALIBRATION** (sub-list)

▪ **BY SENSITIVITY**

- **SENSITIVITY**; available values of sensitivity in mV/Pa:
  - **10  $\mu\text{V} / \text{ms}^{-2}$  .. 10  $\text{V} / \text{ms}^{-2}$**  (in the case of vibration measurements) and
  - **50  $\mu\text{V/Pa}$  .. 50  $\text{V/Pa}$**  (in the case of sound measurements)

- **CAL. FACTOR**; it displays calculated calibration factor

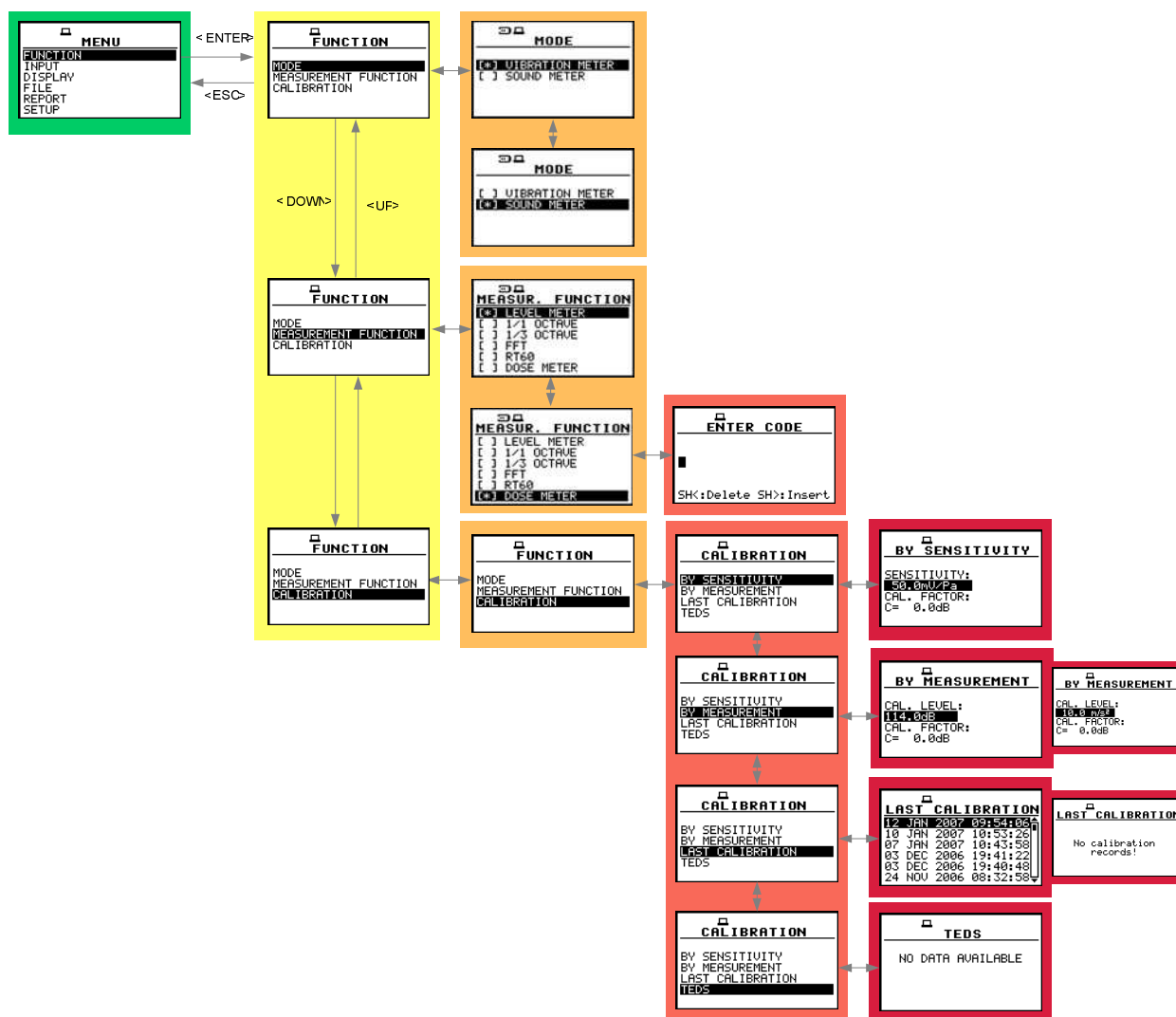
▪ **BY MEASUREMENT** (sub-list)

- **CAL. LEVEL**; available values of calibration level:
  - **100  $\text{mm} / \text{s}^2$  .. 1  $\text{km} / \text{s}^2$**  in the case of vibration measurements (or **100 dB .. 180 dB** if the reference level was set to **1  $\mu\text{m} / \text{s}^2$**  and the **LOGARITHM** scale was selected in the **DISPLAY SCALE** sub-list)
  - **54 dB .. 134 dB** in the case of sound measurements

- **CAL. FACTOR**; it displays calculated calibration factor after the measurement

- **LAST CALIBRATION**; it enables the user to view the last calibration records

- **TEDS** - automatical reading of the transducer parameters by the instrument, this function will be available soon, **NO DATA AVAILABLE** message appears on the display



### Control diagram of the FUNCTION list

❖ **INPUT** (one of the main lists available after pressing the **<MENU>** push-button)

➤ **MEASUREMENT SETUP** (sub-list)

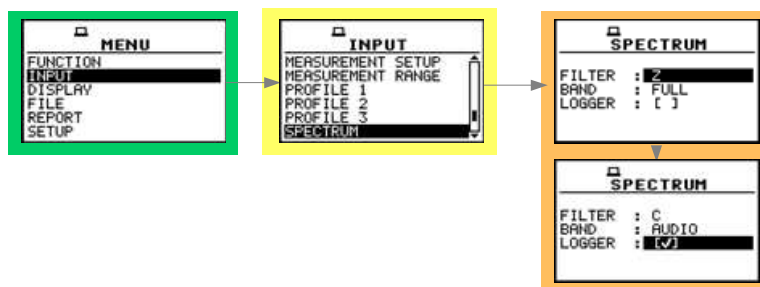
- **START DELAY;** available values of the delay before starting the execution of the measurements: **1s .. 60s**
- **INTEGR. PERIOD;** available values of the integration time: **Inf, 1s .. 24h**
- **REP. CYCLE;** available values for the measurement cycles, which has to be repeated: **Inf, 1 .. 1000**
- **LOGGER off/ on;** saving measurement results in instrument's logger memory
  - **LOGGER STEP;** available values of the step with which the measurement results are saved in an instrument's logger: **2 ms .. 1 h**
  - **LOGGER NAME;** editing the name of the logger's file

➤ **MEASUREMENT RANGE:** range of the sound or vibration level measurements

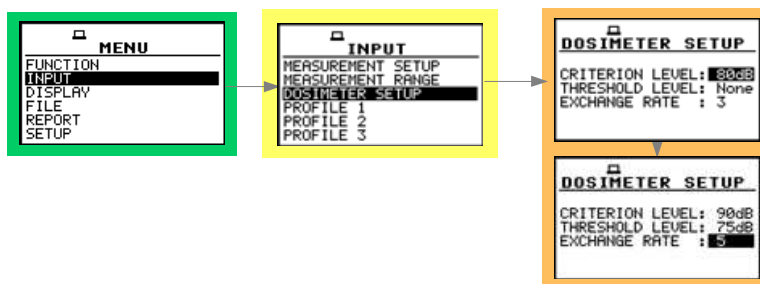
- **LOW**
  - **RMS (HP):**  $1.41 \text{ mm/s}^2 \div 100 \text{ m/s}^2$ , **PEAK:**  $31.6 \text{ mm/s}^2 \div 141 \text{ m/s}^2$  in the case of vibration measurements
  - **RMS (A):**  $25.0 \text{ dB} \div 126.6 \text{ dB}$ , **PEAK:**  $59.0 \text{ dB} \div 129.6 \text{ dB}$  (sound measurements)
- **HIGH**

- **RMS (HP):**  $10 \text{ mm/s}^2 \div 708 \text{ m/s}^2$ , **PEAK:**  $316 \text{ mm/s}^2 \div 1 \text{ km/s}^2$  in the case of vibration measurements
  - **RMS (A):**  $36.0 \text{ dB} \div 143.6 \text{ dB}$ , **PEAK:**  $72.0 \text{ dB} \div 146.6 \text{ dB}$  (sound measurements)
- **DOSIMETER SETUP** (sub-list) (in **DOSE METER** mode, *path: MENU / FUNCTION / MEASUREMENT FUNCTION / DOSE METER*)
- **CRITERION LEVEL;** available values of the permitted steady state noise level: **80 dB, 84 dB, 85 dB, 90 dB**
  - **THRESHOLD LEVEL;** available values of the noise threshold: **None, 75 dB, 80 dB, 85 dB, 90 dB**
  - **EXCHANGE RANGE;** available values of the exchange range (the amount by which the permitted noise level may increase if the exposure time is halved) **2 dB .. 5 dB**
- **PROFILE 1** (sub-list)
- **FILTER;** available digital weighting filters used in the first profile during the measurements:
    - **Z, HP1, HP3, HP10, Vel1, Vel3, Vel10, VelMF, Dil1, Dil3, Dil10, KB, Wk, Wd, Wc, Wj, Wm, Wh, Wg, Wb;** available filters in vibration measurements
    - **Z, A, C;** available filters in sound measurements
  - **DETECTOR;** available values of the detector time constant used in the first profile:
    - **100ms, 125ms, 200ms, 500ms, 1.0s, 2.0s, 5.0s, 10.0s;** available detector time constant in vibration measurements
    - **IMP., FAST, SLOW;** available detector time constant in sound measurements
  - **LOGGER;** available measurement results which has to be saved in the instrument's logger from the first profile (setting possible only when **LOGGER** is switched on (*path: MENU / INPUT / MEASUREMENT SETUP / LOGGER On*))
    - **PEAK, P-P, MAX, RMS** in the case of vibration measurements
    - **PEAK, MAX, MIN, RMS** in the case of sound measurements
- **PROFILE 2** (sub-list)
- **FILTER;** available digital weighting filters used in the second profile during the measurements:
    - **Z, HP1, HP3, HP10, Vel1, Vel3, Vel10, VelMF, Dil1, Dil3, Dil10, KB, Wk, Wd, Wc, Wj, Wm, Wh, Wg, Wb;** available filters in vibration measurements
    - **Z, A, C;** available filters in sound measurements
  - **DETECTOR;** available values of the detector time constant used in the second profile:
    - **100ms, 125ms, 200ms, 500ms, 1.0s, 2.0s, 5.0s, 10.0s;** available detector time constant in vibration measurements
    - **IMP., FAST, SLOW;** available detector time constant in sound measurements
  - **LOGGER;** available measurement results which has to be saved in the instrument's logger from the second profile
    - **PEAK, P-P, MAX, RMS** in the case of vibration measurements
    - **PEAK, MAX, MIN, RMS** in the case of sound measurements
- **PROFILE 3** (sub-list)
- **FILTER;** available digital weighting filters used in the third profile during the measurements:
    - **Z, HP1, HP3, HP10, Vel1, Vel3, Vel10, VelMF, Dil1, Dil3, Dil10, KB, Wk, Wd, Wc, Wj, Wm, Wh, Wg, Wb;** available filters in vibration measurements
    - **Z, A, C;** available filters in sound measurements
  - **DETECTOR;** available values of the detector time constant used in the third profile:
    - **100ms, 125ms, 200ms, 500ms, 1.0s, 2.0s, 5.0s, 10.0s;** available detector time constant in vibration measurements
    - **IMP., FAST, SLOW;** available detector time constant in sound measurements
  - **LOGGER;** available measurement results which has to be saved in the instrument's logger from the third profile

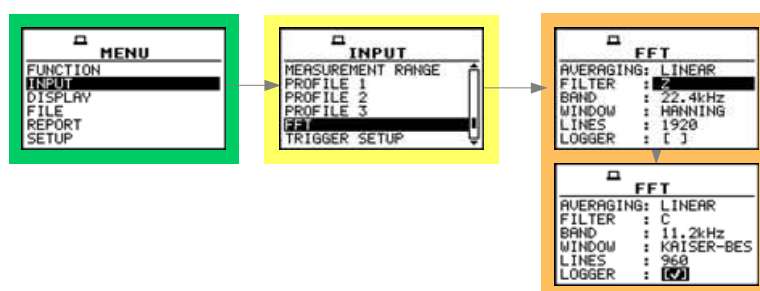
- **PEAK, P-P, MAX, RMS** in the case of vibration measurements
  - **PEAK, MAX, MIN, RMS** in the case of sound measurements
- **SPECTRUM** (sub-list); this sub-list is not available in the case of the **SLM** or **VLM**; it appears on the display in the case of **1/1 OCTAVE** or **1/3 OCTAVE** analyser
  - **FILTER** (position); available types of the digital weighting filter used during **1/1 OCTAVE** or **1/3 OCTAVE** analysis:
    - **Z** - in the case of vibration measurements and
    - **Z, A, C** - in the case of sound measurements
  - **BAND:**
    - **FULL** - in the case of vibration measurements and
    - **FULL, AUDIO** in the case of sound measurements
  - **LOGGER** (position); it enables the user to save RMS results from **1/1 OCTAVE** or **1/3 OCTAVE** measurement function; available values: [ ] or [√]
- **FFT** (sub-list) this sub-list appears on the display in the case of the **FFT** analyser
  - **AVERAGING** (position); it informs the user about the available averaging during **FFT** analysis:
    - **LINEAR** - in the case of vibration measurements
    - **LINEAR, EXPON.** - in the case of sound measurements
  - **FILTER** (position); available types of the digital weighting filter used during **FFT** analysis:
    - **Z** - in the case of vibration measurements and
    - **Z, A, C** - in the case of sound measurements
  - **BAND** (position); available values of the bands of the **FFT** analysis: **87.5Hz, 175Hz, 350Hz, 700Hz, 1.4kHz, 2.8kHz, 5.6kHz, 11.2kHz, 22.4kHz**
  - **WINDOW** (position), it informs the user about the available coefficients of time window: **HANNING, RECTANGLE, FLAT TOP, KAISER-BESSEL**
  - **LINES**; available values: **480, 960, 1920**
  - **LOGGER**; available values: [ ] or [√]
- **TRIGGER SETUP** (sub-list) (in **LEVEL METER** mode, *path: MENU / FUNCTION / MEASUREMENT FUNCTION / LEVEL METER*)
  - **MEASURE TRIGGER**; it enables the user to switch **on** or **off** the triggering
    - **TRIGGER**; available options: **SLOPE+, SLOPE-, LEVEL+, LEVEL-, GRAD+**
    - **SOURCE**; available sources are **RMS (1)** and **EXT. I/O** (for **SLOPE**)
    - **LEVEL**; available values **24 .. 136 dB**
  - **LOGGER TRIGGER**; it enables the user to switch **on** or **off** the triggering in logger
    - **TRIGGER**; available values **LEVEL+, LEVEL-**
    - **SOURCE: RMS (1)**
    - **LEVEL**; available values **24 .. 136 dB**
    - **PRE**; available values **0 .. 50**, (for **LOGGER STEP** equal to 100 ms => **0.0 .. 5.0 s**)
    - **POST**; available values **0 .. 200**, (for **LOGGER STEP** equal to 100 ms => **0.0 .. 20.0 s**)
  - **RECORDER TRIGGER**; it enables the user to switch **on** or **off** the trigger of recording
    - **TRIGGER**; available options: **SLOPE+, SLOPE-, LEVEL+, LEVEL-, GRAD+**
    - **SOURCE**; available sources are **RMS (1)** and **EXT. I/O** (for **SLOPE**)
    - **LEVEL**; available values **24 .. 136 dB, 1 mm / s<sup>2</sup> .. 10 km / s<sup>2</sup>**
    - **GRADIENT** (for **GRAD+**); available values **1 dB / ms .. 100 dB / ms**



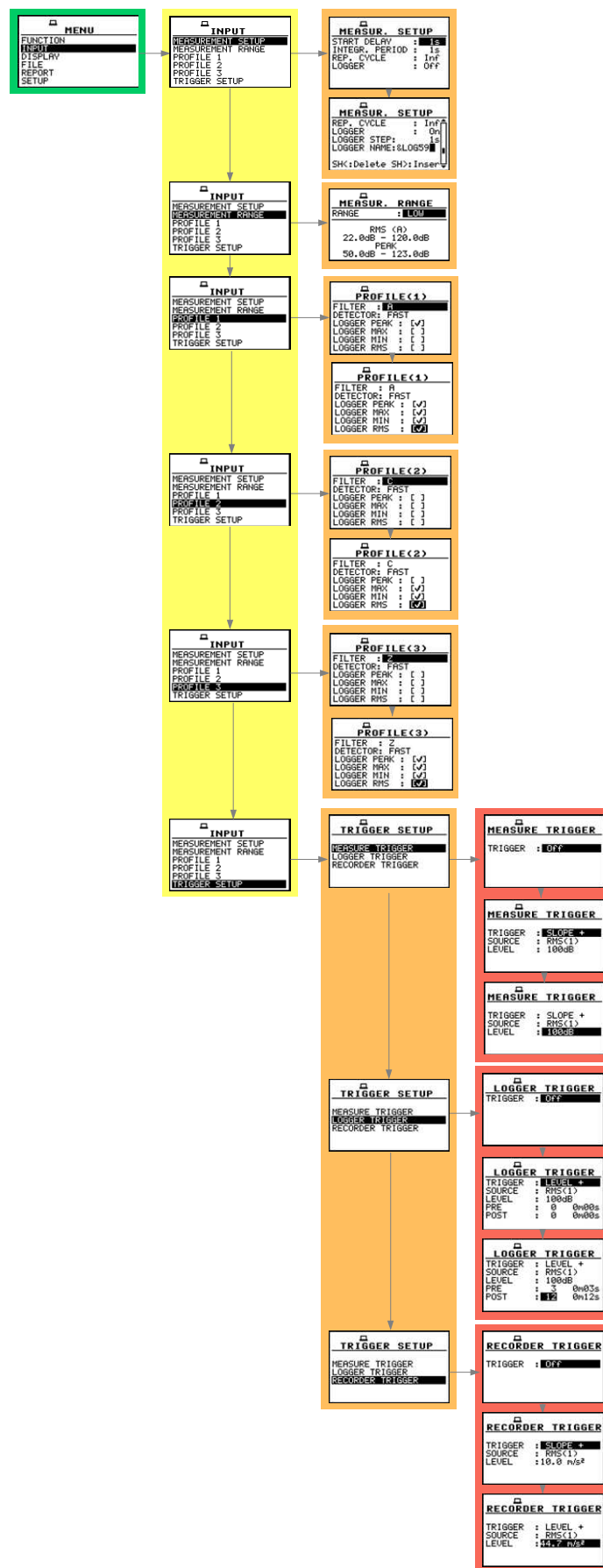
Control diagram of the INPUT list in the 1/1 OCTAVE and 1/3 OCTAVE mode



Control diagram of the INPUT list in the DOSE METER mode



Control diagram of the INPUT list in the FFT mode

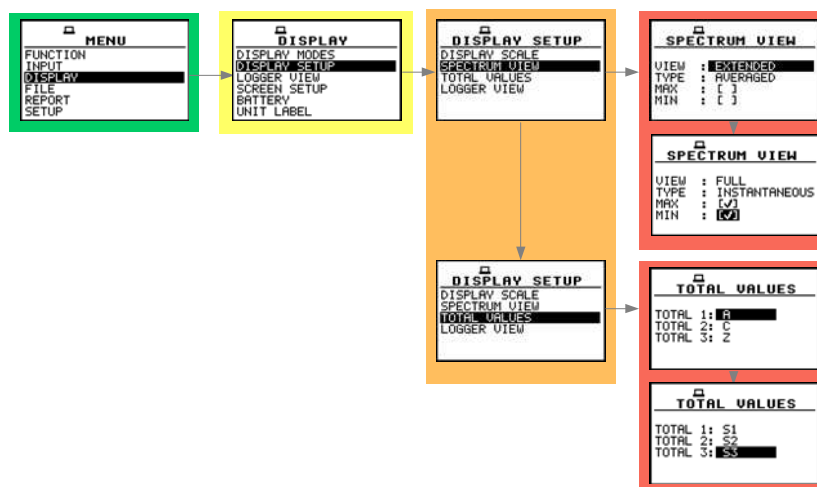


Control diagram of the INPUT list in the LEVEL METER mode

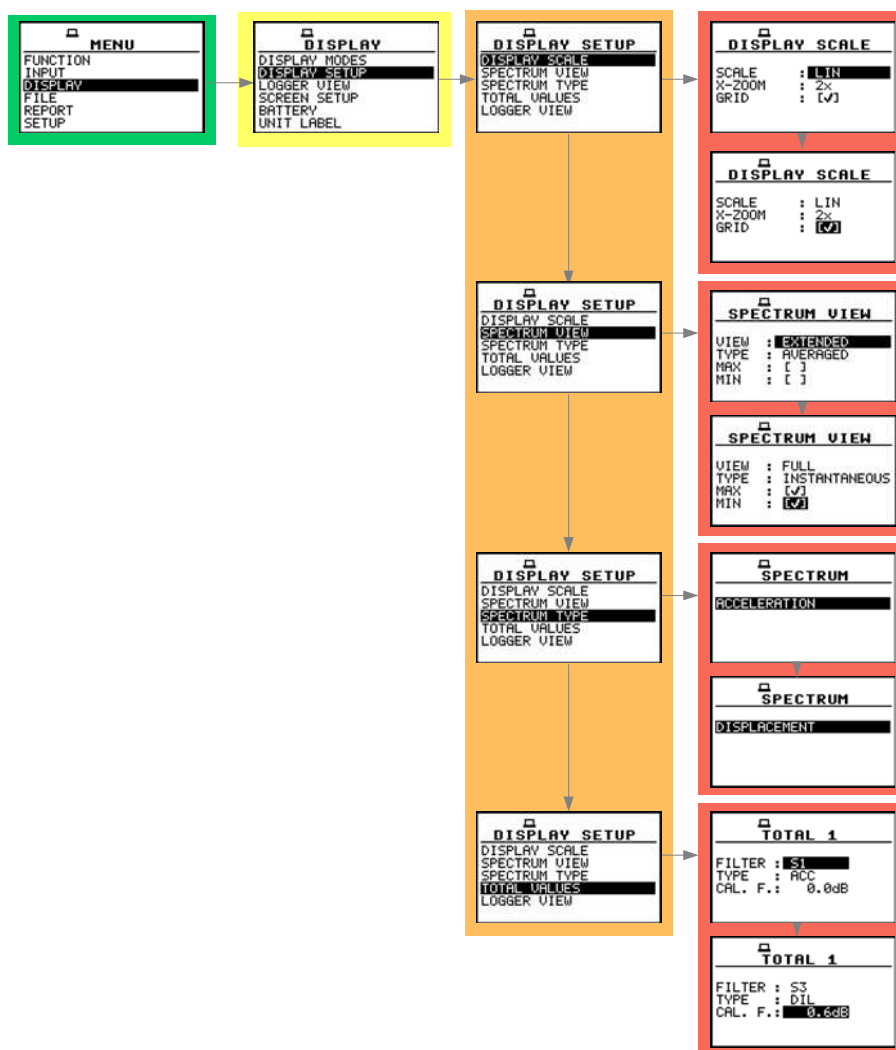


- ❖ **DISPLAY** (one of the main lists available after pressing the **<MENU>** push-button)
  - **DISPLAY MODES** (sub-list); it enables the user to activate ([√]) or switch off ([ ]) the available modes of result's presentation
    - **SPECTRUM**; available values: [√] or [ ]; this position is active only for **1/1 OCTAVE**, **1/3 OCTAVE** and **FFT** mode
    - **3 PROFILES**; available values: [√] or [ ]
    - **STATISTICS**; available values: [√] or [ ]
    - **LOGGER**; available values: [√] or [ ]
    - **FILE INFO**; available values: [√] or [ ]
  - **DISPLAY SETUP** (sub-list)
    - **DISPLAY SCALE**
      - **SCALE**; available values:
        - **LIN**, **LOG** in the case of vibration measurements
        - **LOG** in the case of sound measurements
      - **DYNAMIC**; available values of the dynamics of graphical modes of the result's presentation: **80dB**, **40dB**, **20dB**, **10dB**
      - **X-ZOOM**; it informs the user about the multiplier for the horizontal axis of the graphical modes of the result's presentation; available values: **1x**, **2x**, **3x**, **4x**, **5x**
      - **GRID**; available values [ ] or [√]
      - **AUTOSCALE**; available values [ ] or [√]
    - **SPECTRUM VIEW** (in the case of **1/1 OCTAVE**, **1/3 OCTAVE** or **FFT** analysis)
      - **VIEW**; available spectrum views: **NORMAL**, **FULL**, **EXTENDED**
      - **TYPE** available types of spectrum views: **AVERAGED**, **INSTANTANEOUS**, **MAX**, **MIN**
      - **MAX**; position is accessible if in **TYPE** position **AVERAGED** or **INSTANTANEOUS** were selected; available values: [ ] or [√]
      - **MIN**; position is accessible if in **TYPE** position **AVERAGED** or **INSTANTANEOUS** were selected; available values [ ] or [√]
    - **SPECTRUM TYPE**; available spectrum types (in the case of vibration only: **ACCELERATION**, **VELOCITY**, **DISPLACEMENT**)
    - **TOTAL VALUES** (in the case of **1/1 OCTAVE** or **1/3 OCTAVE** vibration analysis)
      - **TOTAL 1**; available positions in the case of vibration measurements:
        - **FILTER**; available values: **Z**, **S1**, **S2**, **S3**
        - **TYPE**; it appears when **FILTER** different than **Z**; available values: **ACC**, **VEL**, **DIL**
        - **CAL. F.**; it appears as above; available values: **-60 dB**, ..., **60 dB**
      - **TOTAL 2**; available positions:
        - **FILTER**; available values: **PR 2**, **S1**, **S2**, **S3**
        - **TYPE**; it appears when **FILTER** different than **PR 2**; available values: **ACC**, **VEL**, **DIL**
        - **CAL. F.**; it appears as above; available values: **-60 dB**, ..., **60 dB**
      - **TOTAL 3**; available positions:
        - **FILTER**; available values: **PR 3**, **S1**, **S2**, **S3**
        - **TYPE**; it appears when **FILTER** different than **PR 3**; available values: **ACC**, **VEL**, **DIL**
        - **CAL. F.**; it appears as above; available values: **-60 dB**, ..., **60 dB**
    - **TOTAL VALUES** (in the case of **1/1 OCTAVE** or **1/3 OCTAVE** sound analysis)
      - **TOTAL 1**; available values: **A**, **S1**, **S2**, **S3**
      - **TOTAL 2**; available values: **C**, **S1**, **S2**, **S3**

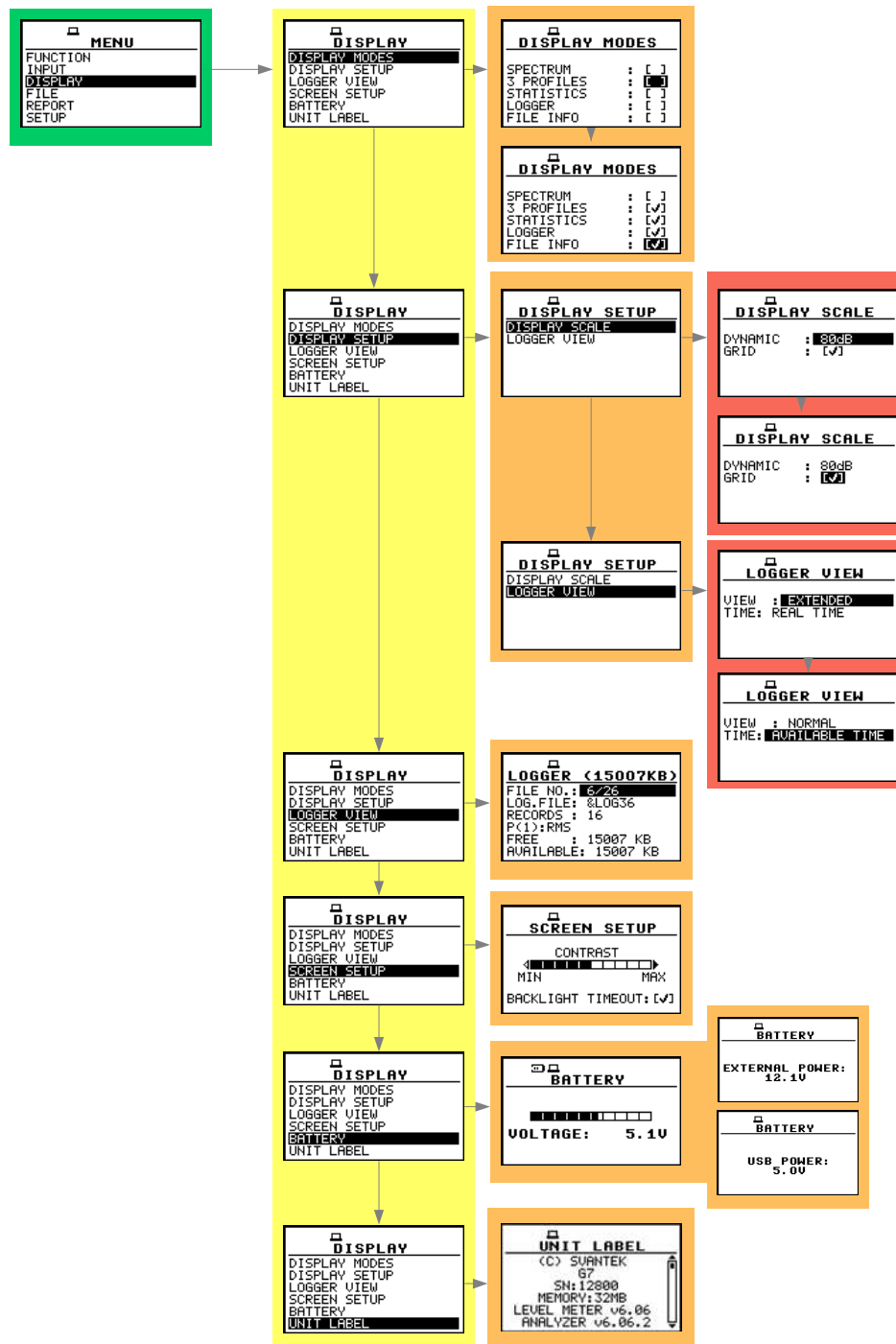
- **TOTAL 3**; available values: **Z, S1, S2, S3**
- **LOGGER VIEW**;
  - **VIEW**; available logger views: **NORMAL, FULL, EXTENDED**
  - **TIME**; available time settings for logger: **REAL TIME, AVAILABLE TIME**
- **LOGGER VIEW** (sub-list)
  - **FILE NO.**; number of the files in the instrument's logger containing the results of the measurements
  - **LOG. FILE**; name of the viewed logger's file
  - **RECORDS**; number of records in the viewed logger's file
  - **P(1)**; settings for logger in PROFILE 1 (**INPUT** list), available values **PEAK, MAX, MIN, RMS** (in the case of sound measurements) or **PEAK, P-P, MAX, RMS** (in the case of vibration measurements)
  - **P(2)**; settings for logger in PROFILE 2 (**INPUT** list), available values **PEAK, MAX, MIN, RMS** or **PEAK, P-P, MAX, RMS**
  - **P(3)**; settings for logger in PROFILE 3 (**INPUT** list), available values **PEAK, MAX, MIN, RMS** or **PEAK, P-P, MAX, RMS**
  - **FREE**; it informs the user about the size of remaining free memory for logger files
  - **AVAILABLE**; it informs the user about the size of the available memory for logger files
- **SCREEN SETUP** (sub-list)
  - **CONTRAST**; it enables the user to select one from twenty one possibilities of the contrast level of the instrument's display
  - **BACKLIGHT TIMEOUT**, available values [✓] or [ ]; if [✓] is chosen it will cause the self-made backlight switching off in the case when the keyboard is not used during the last 30 seconds. If it happened the first pressing of any push-button switches the backlight on
- **BATTERY**; it informs the user about the source of powering of the instrument and current power supply voltage; available sources: **BATTERY, USB POWER** and **EXTERNAL POWER**
- **UNIT LABEL**; it informs the user about the type of the instrument, the serial number of the unit, the internal memory size, available measurement modes and it's software version and the standards which the instrument fulfils



Control diagram of the DISPLAY SETUP list in 1/1 OCTAVE and 1/3 OCTAVE analysis of sound



Control diagram of the DISPLAY SETUP list in 1/1 OCTAVE and 1/3 OCTAVE analysis of vibration



Control diagram of the DISPLAY list

❖ **FILE** (one of the main lists available after pressing the **<MENU>** push-button)➤ **SAVE: [name of the file];** available values: **SAVE NEXT, SAVE**

- **SAVE NEXT** option simplifies the way of saving the file, the file name is generated automatically, basing on the date set in the instrument or on the last name given for the file, next result is saved as a file with the name increased by one (e.g. 11JAN0, 11JAN1, 11JAN2)
- In the **SAVE** option the name of the file can be fully edited in the **FILE NAME** window after pressing the **<▲>** push-button. The cursor is moved with **<<>**, **<>>** push-buttons. The current character is changed with **<SHIFT>+<▲>**, **<SHIFT>+<▼>** push-buttons. The combination **<SHIFT>+<<>** deletes the character currently pointed by the cursor
- The combination **<SHIFT>+<>>** inserts a new character in the position of the cursor
- **No results!** text will be displayed if the instrument did not perform any measurement in prior to choosing the **SAVE** option

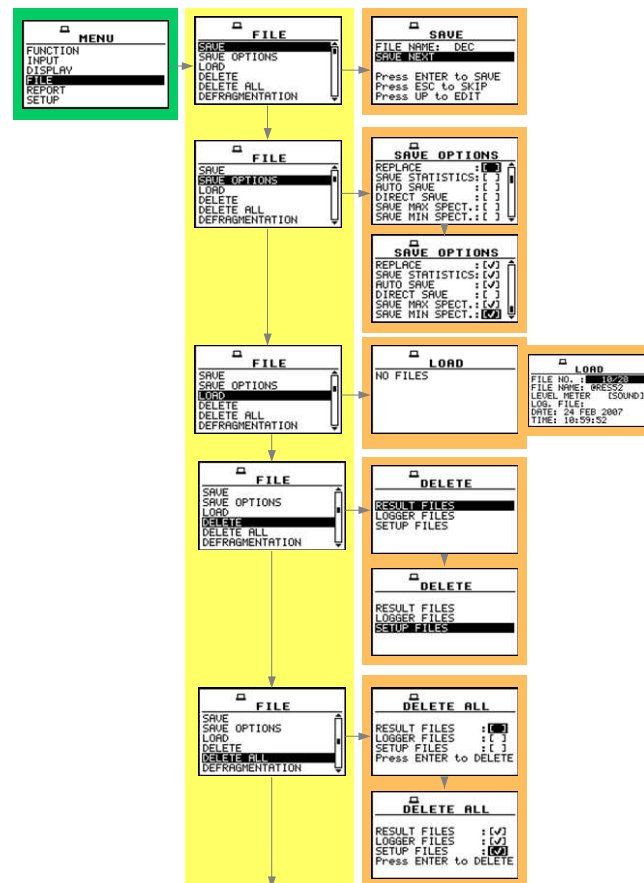
➤ **SAVE OPTIONS** (sub-list)

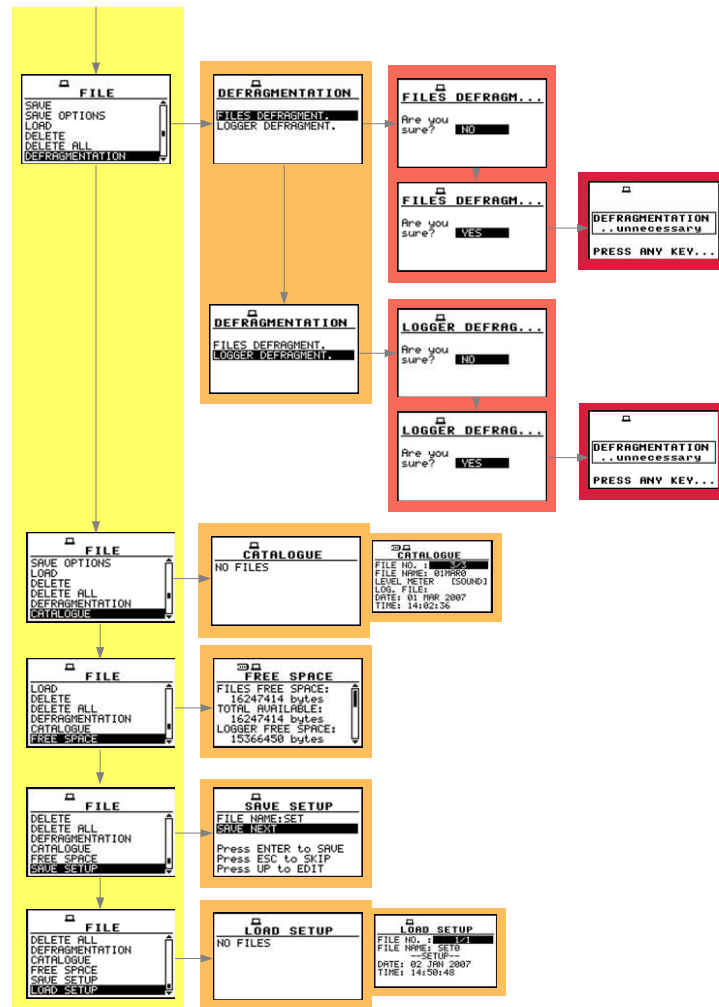
- **RAM FILE;** (only in **LEVEL METER** mode) gives the user a possibility to save data in RAM file. Each time the data are saved, the previous file is overwritten, available values **[√]** or **[ ]**
- **REPLACE;** it enables the user to replace the existing files in the instrument's memory by the files having the same name; available values: **[√]** or **[ ]**
- **SAVE STATISTICS;** it enables the user to save or not the calculated statistics along with the measurement results; available values: **[√]** or **[ ]**
- **AUTO SAVE;** it enables the user to save the measurement results in the instrument's memory automatically without entering **SAVE** or **SAVE NEXT** position (in order to perform this operation the **INT. PERIOD** should be set to at least **10 s**); available values: **[√]** or **[ ]**
- **DIRECT SAVE;** this option enables saving the results with the automatically incremented name after pressing the **<ENTER>** and **<ALT>** push-buttons together
- **SAVE MAX SPECT.;** it enables the user to save the maximal values of the spectrum occurred during the performed analysis; available values: **[√]** or **[ ]**
- **SAVE MIN SPECT.;** it enables the user to save the minimal values of the spectrum occurred during the performed analysis; available values: **[√]** or **[ ]**

➤ **LOAD;** enables one to load to the working space of the instrument's memory the measurement results saved in a file; the **NO FILES** text is displayed in the case when the instrument's memory is empty➤ **DELETE;** it enables the user to verify the list of files in the memory and to delete the selected one from **RESULT FILES**, **LOGGER FILES**, **SETUP FILES** lists; the **NO FILES** text is displayed in the case when the instrument's memory is empty➤ **DELETE ALL;** it enables the user to delete all files saved in the instrument's memory; user can choose to delete either **RESULT FILES**, **LOGGER FILES** or **SETUP FILES**; the confirmation is required before the erasing of all files: „Are you sure?“➤ **DEFRAGMENT;**(sub list)

- **FILES DEFRAGMENT.;** it enables the user to recover the memory, which was previously used by the deleted files; the confirmation is required before the execution of this operation: „Are you sure?“
- **LOGGER DEFRAGMENT.;** it enables the user to recover the memory, which was previously used by the deleted logger files; the confirmation is required before the execution of this operation: „Are you sure?“

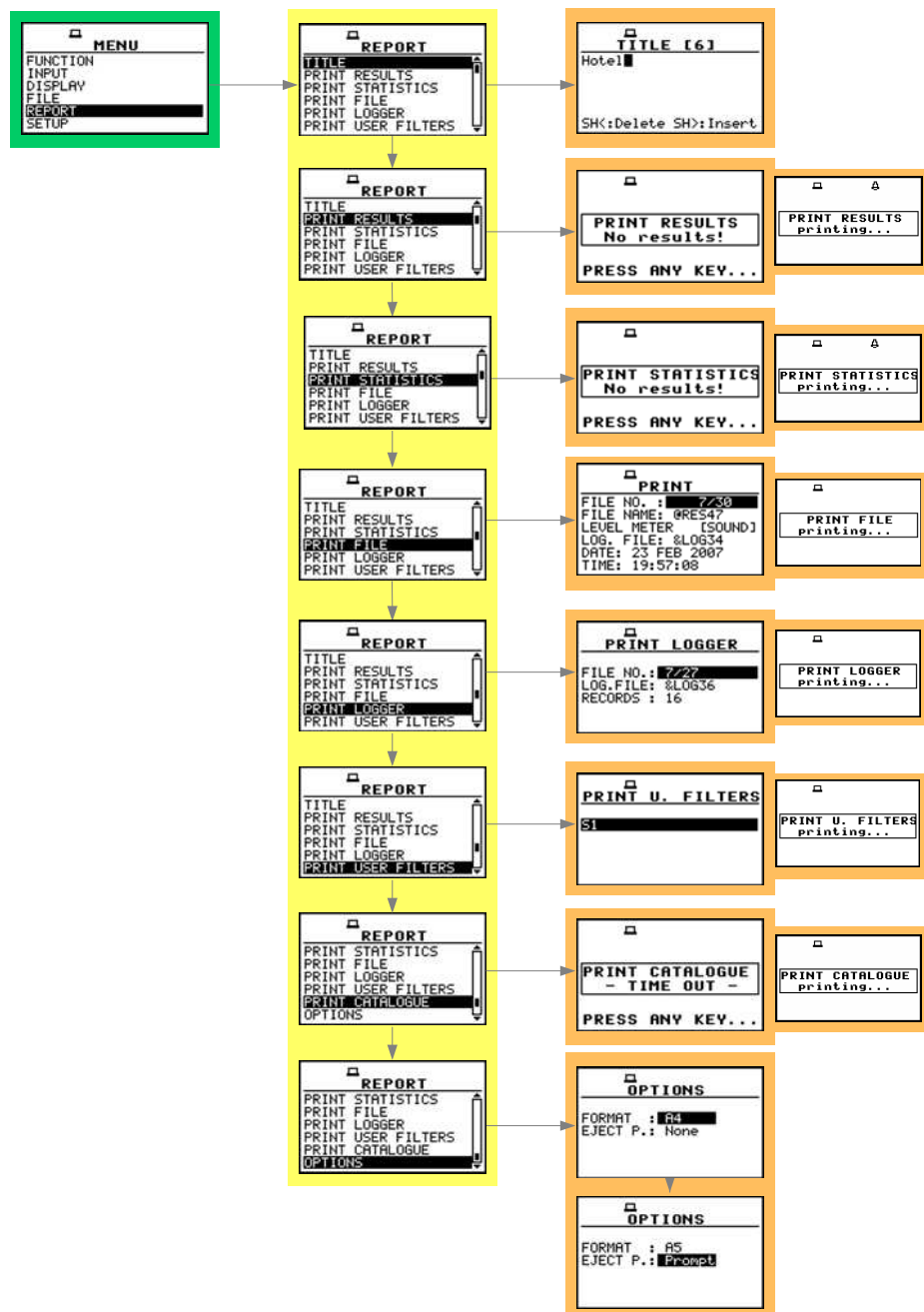
- The text **DEFRAGMENTATION .. unnecessary PRESS ANY KEY** is displayed when the instrument's memory was empty before trial of the defragmentation or when there were no deleted files
- **CATALOGUE**; it enables the user to verify the list of files in the memory; the **NO FILES** text is displayed in the case when the instrument's memory is empty
- **FREE SPACE**; it informs the user about the size of the available memory for saving the measurement results in the file (**FILES FREE SPACE**), the **TOTAL AVAILABLE** bytes of the memory (the number displayed in the **FILES FREE SPACE** increased by the memory which was previously used by the deleting files), the next two numbers given in the **FREE SPACE** window, named **LOGGER FREE SPACE** and **LOGGER AVAILABLE** characterize the logger files memory in the same way
- **SAVE SETUP**; saves the current settings of the instrument; with **<◀>**, **<▶>** push-buttons one can choose between two modes: **SAVE NEXT** and **SAVE**. These are similar to the options available while saving result files. The **SAVE** mode enables to choose the file name manually. In the **SAVE NEXT** mode the file name will be set automatically
- **LOAD SETUP**; it enables the user to verify the list of setup files in the memory and to load the previously saved settings of the instrument; the **NO FILES** text is displayed in the case when there is no setup files





Control diagram of the FILE list

- ❖ **REPORT** (one of the main lists available after pressing the <MENU> push-button, to use option from this list the instrument has to be connected to RS232 or to a PC connected to a printer)
  - **TITLE**; it enables the user to give the header to the printed report
  - **PRINT RESULTS**; it enables the user to print measurement results on the attached printer, the **No results** text is displayed in the case when there is no results to be printed
  - **PRINT STATISTICS**; it enables the user to print the results of the statistical analysis, the **No results** text is displayed in the case when there is no results to be printed
  - **PRINT FILE**, it enables the user to print out on a printer connected directly to the instrument the selected file with the measurement results; the **NO FILES** text is displayed in the case when the file memory is empty
  - **PRINT LOGGER**; it enables the user to print out on a printer connected directly to the instrument the measurement results in a selected file from the logger; the **NO LOGGERS** text is displayed in the case when the instrument did not perform any measurement and the logger is empty; this function is currently under development and **FUNCTION NOT AVAILABLE** message appears on the display
  - **PRINT USER FILTERS**; it enables the user to print out on a printer connected directly to the instrument the values of the user filters introduced in the instrument: **S1, S2, S3**
  - **PRINT CATALOGUE**; it enables the user to print the catalogue of the files stored in the instrument's memory
  - **OPTIONS**
    - **FORMAT**; available values: **A4, A5**
    - **EJECT P.**; available values: **None, Prompt, Auto**



Control diagram of the REPORT list



- ❖ **SETUP** (one of the main lists available after pressing the <MENU> push-button)
  - **LANGUAGE**; it allow the user to choose the instrument's interface language; available values: **GERMAN, ENGLISH, SPANISH, ITALIAN, FLEMISH, FRENCH, HUNGARIAN, POLISH, RUSSIAN, TURKISH**
  - **CLEAR SETUP**; it enables the user to return to the factory settings of the instrument; the confirmation has to be done before the execution of this function
    - **Are you sure?**
  - **COMPENSATION FILTER** (sublist available in sound mode); available values
    - **Off**; it enables the user to switch off the internal noise compensation which should be used in a case of the electrical investigation of the measurement channel; available values: **[\*]** or **[ ]**
    - **FREE FIELD**; it enables the user to switch on the compensation filter which should be used in a case of the measurements performed in the free field using **SA 22** windscreen; available values: **[\*]** or **[ ]**
    - **DIFFUSE FIELD**; it enables the user to switch on the compensation filter which should be used in a case of the measurements performed in the diffuse field; available values: **[\*]** or **[ ]**
    - **OUTDOOR ENVIRONMENTAL**; it enables the user to switch on the compensation filter which should be used in a case of the measurements of the community noise performed in the outdoor monitoring station using **SA 201A** protection; available values: **[\*]** or **[ ]**
    - **OUTDOOR AIRPORT**; ; it enables the user to switch on the compensation filter which should be used in a case of the measurements of the airport noise performed in the outdoor monitoring station; available values: **[\*]** or **[ ]**
    - **EXTENSION CABLE**; it enables the user to switch off all compensation filters, except the internal noise, which should be done in a case of the measurements performed with the usage of the extension cable; available values: **[\*]** or **[ ]**
  - **DAY TIME LIMITS** (window which is available only for sound measurements); specifies the time limits for the instrument to operate in the **DOSE METER** mode with the full 8h working time assumed; available values: **8h–16h, 9h–17h**
  - **EXPOSURE TIME** (window which is available only in sound mode); available values: **1 s .. 8 h**
  - **EXTERNAL I/O SETUP**
    - **MODE**;
      - **ANALOG OUT**
      - **DIGITAL IN**;  
**FUNCTION: EXT. TRIGGER**
      - **DIGITAL OUT**;  
**FUNCTION:**
        - **TRIG. PULSE (POLARISATION: POS. / NEG.)**
        - **ALARM PULSE (ACTIVE LEVEL: LOW / HIGH, SOURCE: PEAK(1), SPL(1), LEQ(1), ALARM LEVEL available values: 30.0 dB .. 140 dB)**
  - **IEPE CURRENT**; it enables the user to select current IEPE supply, available values: **1.5 mA** or **4.5 mA**
  - **REFERENCE LEVELS**:
    - in the case of **vibration** measurements:
      - **ACC**: - it enables the user to set the reference level of the acceleration for the logarithmic scale (the results expressed in **dB** - decibels), available levels are from **1  $\mu\text{m/s}^2$**  to **100  $\mu\text{m/s}^2$**
      - **VEL**: - it enables the user to set the reference level of the velocity for the logarithmic scale (the results expressed in **dB** - decibels), available levels are from **1 nm/s** to **100 nm/s**
      - **DIL**: - it enables the user to set the reference level of the displacement for the logarithmic scale (the results expressed in **dB** - decibels), available levels are from **1 pm** to **100 pm**
    - in the case of **sound** measurements: **20  $\mu\text{Pa}$**
  - **REMOTE COMMUNICATION**
    - **TYPE**; available values: **OFF, CONTINUOUS, PACKET**
    - **PACKET**; available values: **64 .. 1024**
  - **RMS INTEGRATION**

- **RMS INTEGRATION**; available values of detector's type: **LINEAR** or **EXPONENTIAL**
- **RS232**;
  - **BAUD RATE**; it enables the user to set the baud rate: **1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200**
  - **TIME OUT**; it enables the user to set the time out: **1 s .. 60 s**
- **RTC**
  - **RTC**; it enables the user to set the internal real time clock and date of the instrument
- **RT60 AVERAGING**
  - **AVERAGING**; available values **On** or **Off**
  - **AVERAGING CLEAR**; available values **NO** or **YES**
  - **AVERAGING NO.**; set during the execution of the option
- **RT60 OPTIONS**
  - **SMOOTHING**; available values: **0, 1, .., 15**
  - **NOISE MAR.**: **0.0 dB .. 20.0 dB**
- **RT60 RESULTS**; the results of the RT60 given in the table with **EDT (E)**, **T20 (2)** and/or **T30 (3)**
  - **31.5Hz [E]/[ ] [2]/[ ] [3]/[ ]**
  - ...
  - **10.0kHz [E]/[ ] [2]/[ ] [3]/[ ]**
- **SHIFT MODE**
  - **SHIFT**; available modes of the **<SHIFT>** push-button: **Shift** or **2nd Fun.**
  - **ST/SP**; available modes of the **<START / STOP>** push-button: **Normal** or **Inverse**
- **STATISTICAL LEVELS** (sub-list which has is available only in sound mode); available levels **N=1, 10, 20, ..... 90**
- **TIMER** (sub-list); it enables the user to set time of the self switching on of the instrument
  - **MODE**; specifies the mode of automatic power on; available values:
    - **Off**
    - **SINGLE**; (**START DAY**; specifies the date of automatic power on; **START HOUR**; specifies the time of automatic power on)
    - **REGULAR**; (**START DAY**; specifies the date of automatic power on; **START HOUR**; specifies the time of automatic power on, **REPETITION**; specifies time after which next automatic measurement will be executed)
    - **IRREGULAR**; (**START DAY**; specifies the date of automatic power on; **TIMEx**; enables the user to specify four times of automatic measurements)
- **USB–HOST PORT**; it enables the user to choose with [\*] proper functionality of USB–HOST socket for connection of the instrument to **RS232, USB IRDA, USB DISK, SRT RECORDING, WAVE RECORDING, EVENT RECORDING**
- **USER FILTERS**; it enables the user to introduce the coefficients of the filters
  - **SPECTRUM BASED FILTER**
    - **VIEW** it enables the user to select which filter used in **1/1 OCTAVE** or **1/3 OCTAVE** analysis should be viewed; the available options are **S1, S2, S3** and any other transmitted to the instrument from a PC by means of the interface
    - **EDIT** it enables the user to select which filters used in **1/1 OCTAVE** or **1/3 OCTAVE** analysis should be edited; the available options are as follows: **S1, S2, S3** or any other transmitted to the instrument from a PC by means of the interface

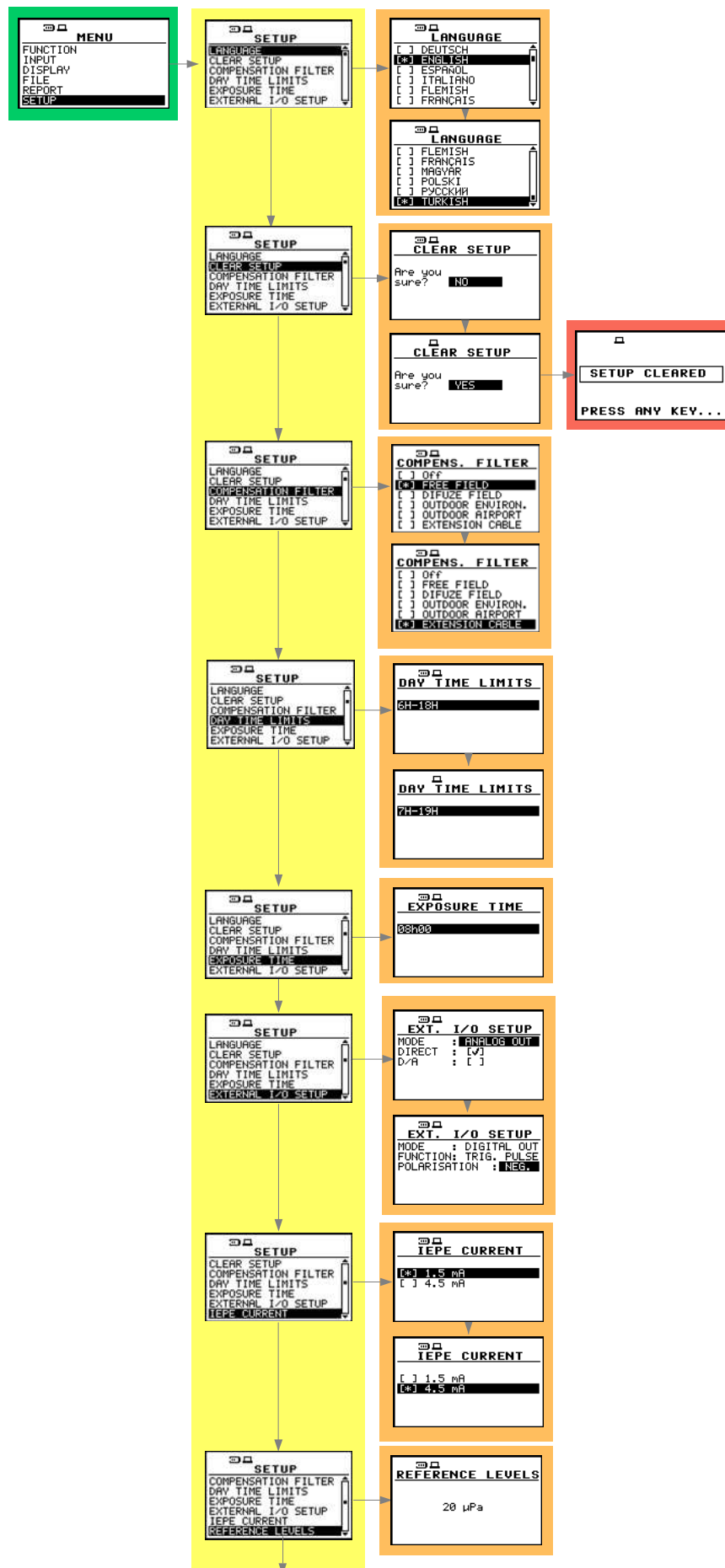
After pressing the **<ENTER>** push-button the **Sx (S1, S2, S3)** sub-list is opened containing the values of the filters; the user can set the values of correcting coefficients for all **1/3 OCTAVE** filters:

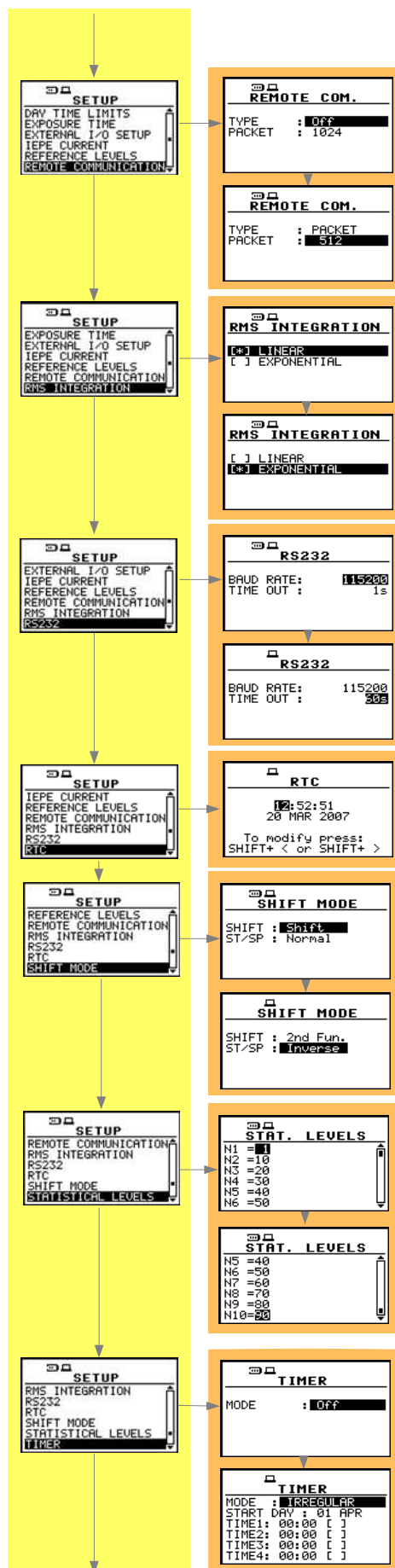
  - ❖ **0.80 Hz**: available values of 0.8 Hz centre frequency filter: **-100.0dB .. 100.0dB**
  - ❖ ...
  - ❖ ...
  - ❖ **20.0 kHz**: available values of 20 kHz centre frequency filter: **-100.0dB .. 100.0dB**

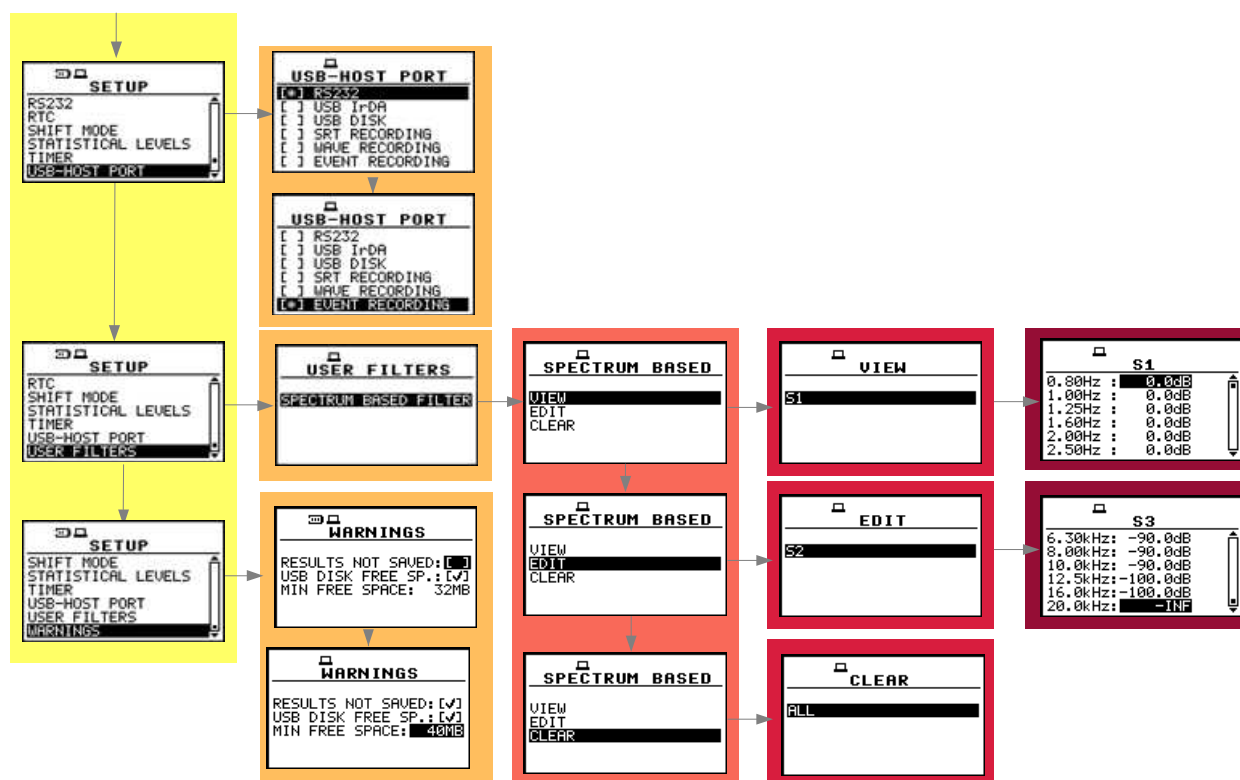
- **CLEAR**, enables the user to select which filters should be cleared; the available options are as follows: **ALL**, **S1**, **S2**, **S3** or any other
- **VIBRATION UNITS** (sub-list which is available only in vibration mode)
- **METRIC** (e.g. **m/s<sup>2</sup>**, **m/s**, **m**) (position); available values: [ ] / [\*]
  - **NON-METRIC** (e.g. **g**, **ips**, **mil**) (position); available values: [ ] / [\*]
- **WARNINGS**
- **RESULTS NOT SAVE**; it enables the user to switch on or off the warning that the results of the measurement were not saved in the memory; available values: [✓] or [ ]
  - **USB DISK FREE SP.**; it enables to generate a warning after checking free space on the USB disk
  - **MIN FREE SPACE**; specifies the limit of available memory for warning; if the available memory is not greater than that limit the warning will be displayed; available values: **1 MB .. 1024 MB**



Control diagram of the SETUP list in the RT60 mode







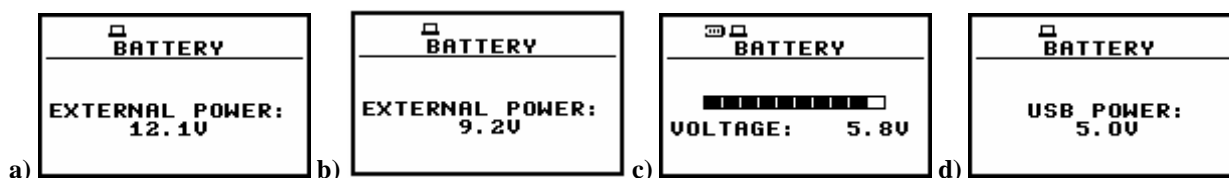
Control diagram of the SETUP list in sound mode

## 3.2 Powering of the instrument

The **G7** can be powered by one of the following sources:

- **SA 15 external DC power** source adapter (110 V / 230 V mains) - 6 V DC÷15 V DC (1.5 W)
- **SA 17A external battery pack** - operation time > 24 h (with USB 1.1 Host function not active and backlight off)
- Four AA standard **batteries**. In the case of alkaline type, fully charged set can operate more than 12 h (6.0 V / 1.6 Ah) (with USB 1.1 Host function not active and backlight off). Instead of the ordinary, four AA rechargeable **batteries** can be used (for charging them the separate charger is required). In this case, using the best NiMH type, the operation time can be increased up to 16 h (4.8 V / 2.6 Ah) (with USB 1.1 Host function not active and backlight off)
- **USB** interface - 500 mA HUB

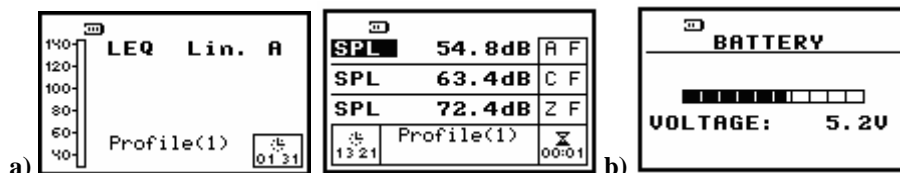
The **BATTERY** window (*path: MENU / DISPLAY / BATTERY*) looks differently, depending on the current powering source.



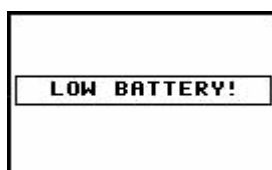
**BATTERY** windows with different sources powering the instrument: SA 15 external DC power adapter (a), SA 17A external battery pack (b), internal batteries (c) and USB power (d)

For the external powering the **SA 15** adapter should be connected to the **Power** socket located on the bottom cover of the instrument. When the instrument is powered from the external power supply or by the USB interface, the red diode on the right corner of the front panel bottom of the device switches on. In the case of **SA 15** the **EXTERNAL POWER** message appears in the **BATTERY** window (*path: MENU / DISPLAY / BATTERY*).

When the instrument is powered from batteries, the **“Battery”** icon is presented on the top of the display. When voltage of the batteries is too low, the icon is flashing. To change the batteries the user has to switch off the instrument, take off the black bottom cover of the instrument, unscrew battery cover, change the batteries and reassemble the parts of the instrument. The fully charged NiMH battery ensures more than 16 hours of the continuous work of the instrument (with the backlight off and USB 1.1 Host function not active). The operation time is decreased about 20 % with the backlight switched on. The battery condition can be checked by means of the **BATTERY** function. It is also presented continuously on the display by means of the **“Battery”** icon.

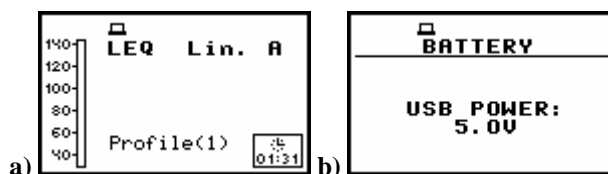


Displays with **“Battery”** icon (a) and in the **BATTERY** window (path: MENU / DISPLAY / BATTERY) (b)



Display with **LOW BATTERY** message

When there is a connection to the USB interface (**USB Device** socket is connected by means of the cable to a PC), the **“Computer”** icon is presented on the top of the display and in the **BATTERY** window, there is the **USB POWER 5.0 V** message.

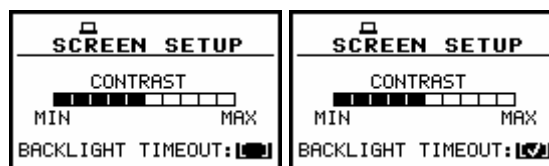


Displays with the **“Computer”** icon (a) and in the **BATTERY** window (b)



**Notice:** In the case when **“Battery”** icon is flashing, it is strongly recommended to use as soon as possible the external power adapter or USB interface. In the other case the instrument after a while will be switched off by itself!

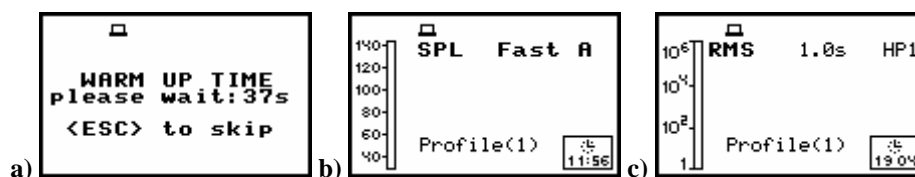
The backlight of the display can be activated by means of the <<> + <>> push-buttons pressed together. For saving the power of the battery, in the normal "day-light" operation it is recommended to **keep the backlight off**. The user can set the **BACKLIGHT TIMEOUT** (path: MENU / DISPLAY / SCREEN SETUP / BACKLIGHT TIMEOUT), which will cause the self-made backlight switching off in the case when the keyboard is not used during the last 30 seconds. If it happened the first pressing of any push-button switches the backlight on.



**SCREEN SETUP** windows; **BACKLIGHT TIMEOUT** activation

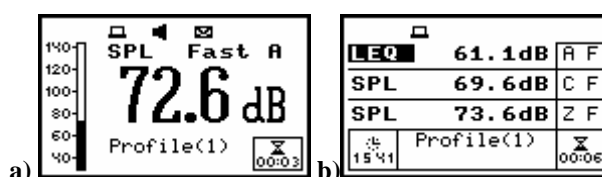
### 3.3 Initial setup of the instrument

The instrument passes the self-test after switching on (in this time the producer and the name of the instrument is displayed on the display) and then it enters the sound mode. The default display mode for result's presentation is one profile.

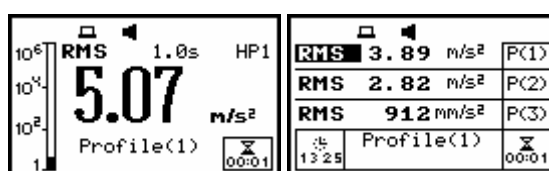


Displays after switching on the instrument in sound (b) or vibration mode (c)

To start the measurements the user has to press the **<START /STOP>** push-button. The result of the measurement is displayed with the unit of the measurement in so-called one profile mode. On the left side of the display, the analogue-like indicator is presented. On the bottom of the display, there is a profile from which comes the measurement (**Profile (1)**, **Profile (2)** or **Profile (3)**). On the top of the display (under the icons line) there are the following data: the function name (**SPL**, **LEQ**, **SEL**, **Lden**, **LEPd**, **Ltm3**, **Ltm5**, **Lxx**, **OVL**, **PEAK**, **MAX**, **MIN** in the case of sound measurements or **RMS**, **VDV**, **OVL**, **PEAK**, **P-P**, **MTVV** in the case of vibration measurements), the detector time constant (**IMP.**, **FAST**, **SLOW** or **100 ms**, **125 ms**, .. **10.0 s**, .. - when the detector is exponential or **Lin** when the detector is linear) and the weighted filter (**A**, **C**, **Z** or **HP1**, **HP3**, **HP10**, **Vel1**, **Vel3**, **Vel10**, **VelMF**, **Dil1**, **Dil3**, **Dil10**, **KB**, **Wk**, **Wd**, **Wc**, **Wj**, **Wm**, **Wh**, **Wg**, **Wb**). The real time clock / time of the measurement are presented on the right side of the bottom.



Displays in one profile (a) and 3 PROFILES display mode (b) with the SLM measurement results



Displays in one profile (a) and 3 PROFILES display mode (b) with the VLM measurement results

The results of the measurements can be presented in one profile, in **3 PROFILES**, in **STATISTICS** and in **LOGGER** (these are the available display modes set by the producer; cf. *path: MENU / DISPLAY / DISPLAY MODES*). It is also possible to activate **FILE INFO** display mode (*path: MENU / DISPLAY / DISPLAY MODES / FILE INFO*). It is possible to change the display mode pressing the **<▲>** or **<▼>** push-buttons together with the **<SHIFT>** one. In so-called **3 PROFILES** display mode the results of the measurement from all profiles are displayed simultaneously. The units, weighted filter and detector time constant are also shown. The default settings (set up by the producer) for the profiles are as follows:

**PROFILE 1** - **A** weighting filter (**FILTER: A**), **FAST** type of the RMS detector (**DETECTOR: FAST**), the results of the measurements are not stored in the logger's file (**LOGGER PEAK: [ ]**, **LOGGER MAX: [ ]**, **LOGGER MIN: [ ]**, **LOGGER RMS: [ ]**);

**PROFILE 2** - **C** weighting filter (**FILTER: C**), **FAST** type of the RMS detector (**DETECTOR: FAST**), the results of the measurements are not stored in the logger's file (**LOGGER PEAK: [ ]**, **LOGGER MAX: [ ]**, **LOGGER MIN: [ ]**, **LOGGER RMS: [ ]**);



**PROFILE 3** - Z weighting filter (**FILTER: Z**), **FAST** type of the detector (**DETECTOR: FAST**), the results of the measurements are not stored in the logger's file (**LOGGER PEAK: [ ]**, **LOGGER MAX: [ ]**, **LOGGER MIN: [ ]**, **LOGGER RMS: [ ]**);

The default settings (set up by the producer) for the profiles, in the case of vibration measurements, are as follows:

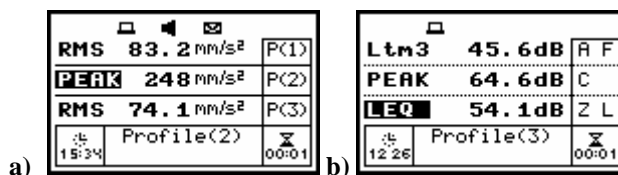
**PROFILE 1** - HP1 weighting filter (**FILTER: HP1**); **1.0s** type of the RMS detector (**DETECTOR: 1.0s**), the results of the measurements are not stored in the logger's file (**LOGGER PEAK: [ ]**, **LOGGER P-P: [ ]**, **LOGGER MAX: [ ]**, **LOGGER RMS: [ ]**);

**PROFILE 2** - HP3 weighting filter (**FILTER: HP3**), **1.0s** type of the RMS detector (**DETECTOR: 1.0s**), the results of the measurements are not stored in the logger's file (**LOGGER PEAK: [ ]**, **LOGGER P-P: [ ]**, **LOGGER MAX: [ ]**, **LOGGER RMS: [ ]**);

**PROFILE 3** - HP10 weighting filter (**FILTER: HP10**), **1.0s** type of the RMS detector (**DETECTOR: 1.0s**), the results of the measurements are not stored in the logger's file (**LOGGER PEAK: [ ]**, **LOGGER P-P: [ ]**, **LOGGER MAX: [ ]**, **LOGGER RMS: [ ]**);

The user can change all mentioned above settings using **PROFILE x** sub-list of the **INPUT** list. The instrument remembers all changes. The return to the default settings (set up by the producer) is possible after the execution of the **CLEAR SETUP** position available in the **SETUP** list.

The instrument can be used not only as the sound or vibration level meter (**SLM** or **VLM**) but also as **1/1 OCTAVE** and **1/3 OCTAVE** analyser, **DOSE METER** and for **FFT**, **RT60** measurements. In order to distinguish the **LEVEL METER** function from the others, which are available in **3 PROFILES** display mode, two continuous horizontal lines are used to separate the measurement results from different profiles. In other modes than **SLM** or **VLM** the mentioned above lines are dotted.



Displays in 3 PROFILES display mode with the measurements results, which are from **LEVEL METER** mode (continuous lines) (b) and with the results, which are not from the **LEVEL METER** (dotted lines)



**Notice:** See next chapters for more details concerning different settings.

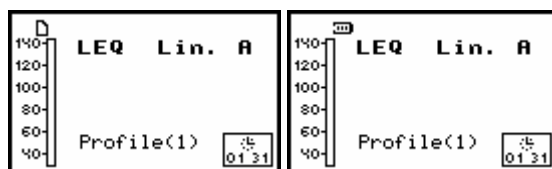
More data about the instrument's state are given by means of the icon's row visible in the top of the display ("**Paper sheet**", "**Battery**", "**Computer**", "**Antenna**" ("**Tree**"), "**Loudspeaker**", "**Headphone**", "**Envelope**", "**Bell**", "**Timer**" and "**Arrows**"). The meanings of the icons are as follows:



Display with all available icons

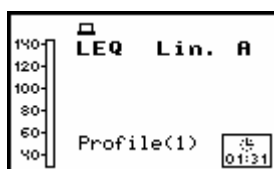
"**Paper sheet**" icon is displayed when the USB disk or IrDA is connected to the instrument.

"**Battery**" is displayed when the instrument is powered from the batteries, icon corresponds to the batteries **state** (three, two, one or none vertical bars in side of the icon). When voltage of batteries is too low, the icon is flashing.



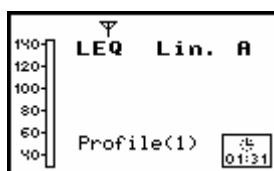
Display with “Paper sheet” and “Battery” icons

“**Computer**” is displayed when there is the USB connection with the PC; the icon is flashing during RT (Real Time) transmission.



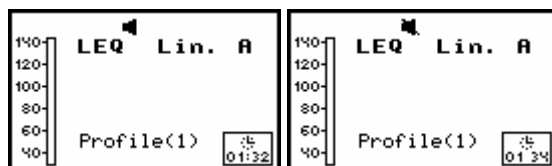
Display with “Computer” icon

“**Antenna**” (“**Tree**”) icon is displayed in a flashing mode together with the “**Loudspeaker**” when the measurement is started, the trigger is switched on and the level of the signal is too low to start the registration.



Display with “Antenna” (“Tree”) icon

“**Loudspeaker**” icon is displayed when the measurement is started and executed. The crossed out loudspeaker means measurement is paused (Pause).

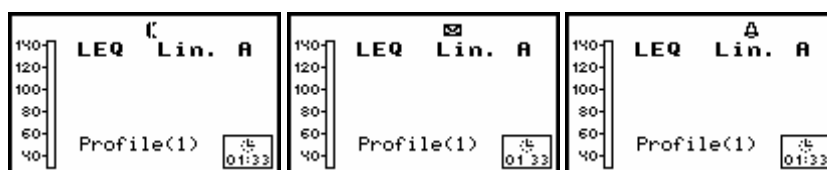


Display with “Loudspeaker” icon

“**Headphone**” is displayed when RS 232 (**SV 55**) interface is connected to the instrument.

“**Envelope**” icon is presented when the current **measurement results are logged** in the instrument’s logger file. Together with this icon, the “**Loudspeaker**” icon is always displayed. In the case when the “**Envelope**” icon starts flashing, it means that the whole logger memory of the instrument is filled out. The new measurement result is not saved in it. If the user wants to save these results, he has to **DELETE** some logger files and execute **LOGGER DEFRAGMENTATION** (*path: MENU / FILE / DEFRAGMENTATION / LOGGER DEFRAGMENTATION*).

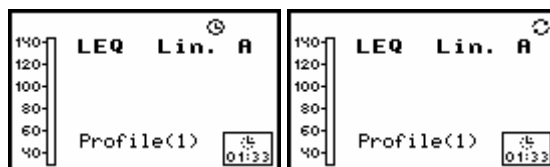
“**Bell**” is displayed when overload has taken place during the last measurement cycle (the icon is displayed also after the measurement and after loading the file with the overloaded results).



Displays with “Headphone”, “Envelope” and “Bell” icons

“**Timer**” icon flashing means that the instrument’s **Timer** is switched on and the instrument is waiting for the set time of the measurement. When the measurement was started by the **Timer**, the icon is presented without flashing.

“**Arrows**” are flashing after pressing the **<ALT>** or **<SHIFT>** push-button when the **2nd Fun** is selected in the **SHIFT MODE** (path: **MENU / SETUP / SHIFT MODE / SHIFT / 2nd FUN**), that means other push-buttons have second or third meaning (i.e. after pressing the **<SHIFT>** the meaning of **<ENTER>** push-button is **<MENU>**; after pressing the **<ALT>** the meaning of **<ESC>** push-button is changed into **<PAUSE>**).



Displays with “Timer” and “Arrows” icons



**Notice:** The time of the measurement is displayed **in minutes and seconds** in the range from **1 sec. to 39 minutes and 59 seconds**. After this limit, the hours and minutes are shown (i.e. 00:40).



**Notice:** **THE USER DYNAMICALLY MODIFIES THE DEFAULT SETUP.** The last set-up of the instrument (during the power off) is stored and is available after power on.

### 3.4 Selection of the working mode- MODE

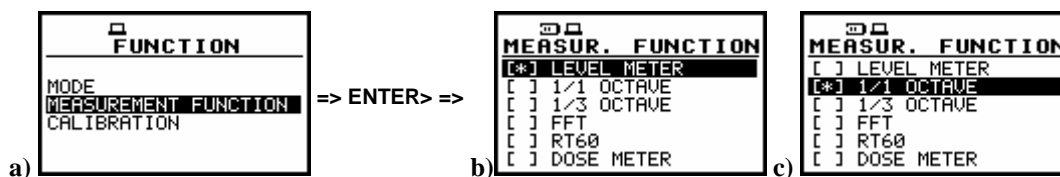
The device can work in two modes – vibration meter and sound meter. A mode is selected by placing the special character in the line with the mode’s name. The position of the character can be changed using the **<▲>**, **<▼>** push-buttons. After placing the character in the line with the option’s name the user has to press the **<ENTER>** push-button.

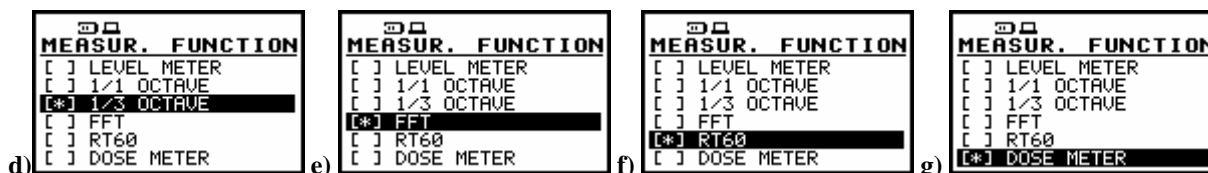


FUNCTION list opened, MODE selected (a) and MODE sub-list opened with all available modes b), (c)

### 3.5 Activation of optional functions

The **1/1 OCTAVE**, **1/3 OCTAVE**, **DOSE METER**, **FFT**, **RT60** and **time history data LOGGER**, **time domain signal recording**, **human vibration filters** are the optional functions broadening applications of the instrument. Some of the additional functions are specified in the **MEASUR. FUNCTION** (path: **MENU / FUNCTION**) others – in the other lists.





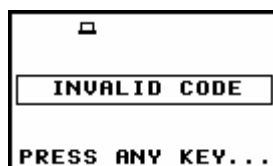
Displays with **FUNCTION** list opened in SM, **MEASUREMENT FUNCTION** selected (a) and **MEASUR. FUNCTION** sub-list opened with all available options (b), (c), (d), (e), (f) and (g)

A function is selected by placing the special character in the line with the function's name. The position of the character can be changed using the **<▲>**, **<▼>** push-buttons. After placing the character in the line with the function's name the user has to press the **<ENTER>** push-button. The window for entering the access code to a function is opened in the first essay of its execution (after pressing the **<ENTER>** push-button) in the case when a function was not purchased together with the instrument.



Displays during the entering of the access code to a function

The introduction of the access code is performed in the same way as the edition of the other text variables using the **<<<>**, **<>>>** push-buttons (the selection of the character's position), the **<SHIFT>** and **<>>>** push-buttons (the **Insert** function), the **<SHIFT>** and **<<<>** push-buttons (the **Delete** function) and the **<▲>**, **<▼>** push-buttons (the codes of characters). The verification is made after pressing the **<ENTER>** push-button. If the entered code was wrong, the message is displayed and the instrument waits for the reaction of the user. After pressing the **<ENTER>** or the **<ESC>** push-button the information that the function is not available is displayed and the instrument once more waits for the reaction of the user.



Display after the unsuccessful verification of the access code

After pressing the **<ENTER>** or the **<ESC>** push-button the instrument returns to the **FUNCTION** list displaying the list of the functions implemented in the unit (cf. the first Figure in this chapter). After successful verification of the access code, the windows described above are no more displayed. Once activated function is always available.



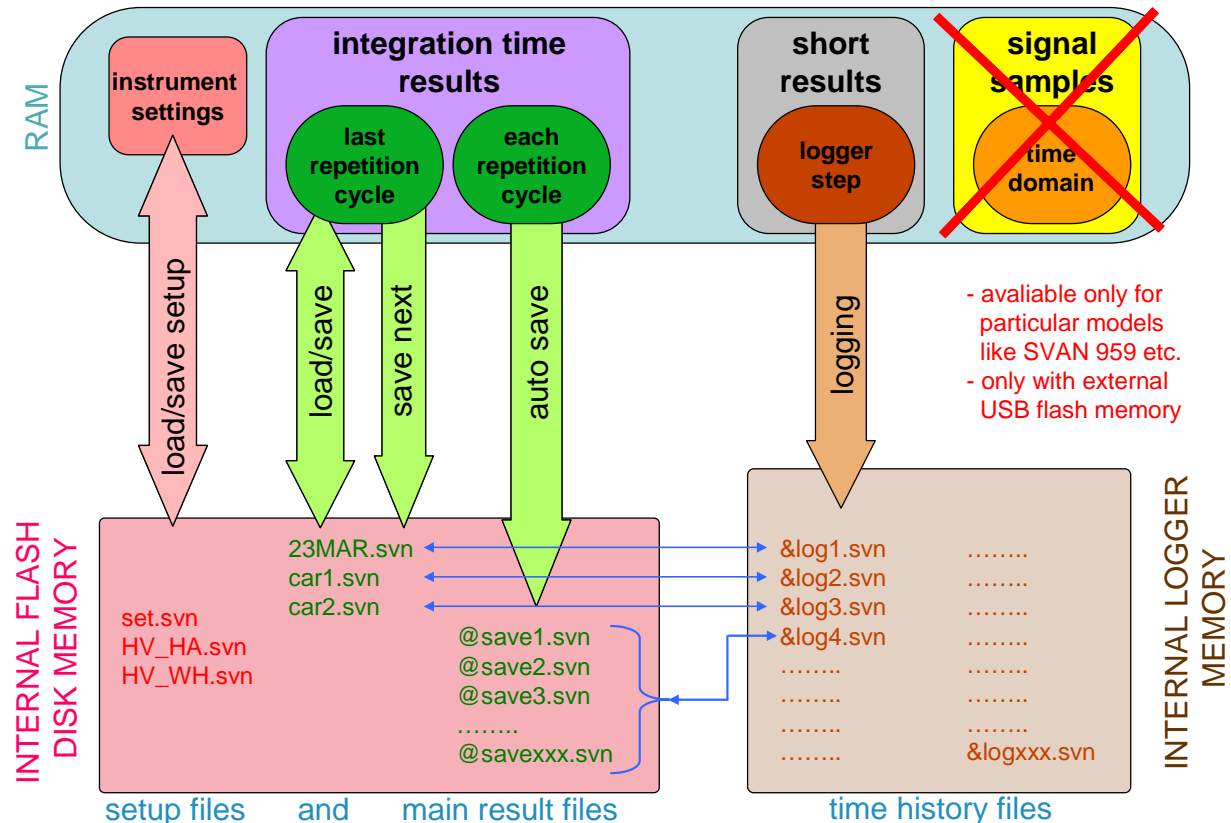
**Notice:** The number of the attempts for the access code entering is limited. After three unsuccessful essays, the possibility is blocked.

### 3.6 Memory organisation

All available measurement results can be stored in the internal FLASH type memory of the instrument (32 MB) or in the external USB Memory Stick (when the optional **USB-HOST** controller is installed in the instrument).

The internal memory of the instrument is divided into two separate parts. One part is dedicated for saving the **result** and **setup** files and its size is equal to 16 252 428 bytes. The second part is used for saving the logger files and its size is equal to 15 859 224 bytes. To save a **result file** the user has to choose one of the available options: **SAVE NEXT** (path: MENU / FILE / SAVE or pressing <ENTER> and <ALT> together), **SAVE** (path: MENU / FILE / SAVE or pressing <ENTER> and <ALT> together), **AUTO SAVE** (path: MENU / FILE / SAVE OPTIONS) or **DIRECT SAVE** (path: MENU / FILE / SAVE OPTIONS). To save a setup file the user has to choose **SAVE SETUP** option from the **FILE** list. The **logger files** are created automatically (the usage of the **SAVE** is not required). The scheme of the instrument's memory organisation without the **USB-HOST** controller is presented below.

### MEMORY ORGANIZATION OF THE SVAN 95x instrument series without USB HOST



Scheme of the instrument's memory organisation without the **USB-HOST**



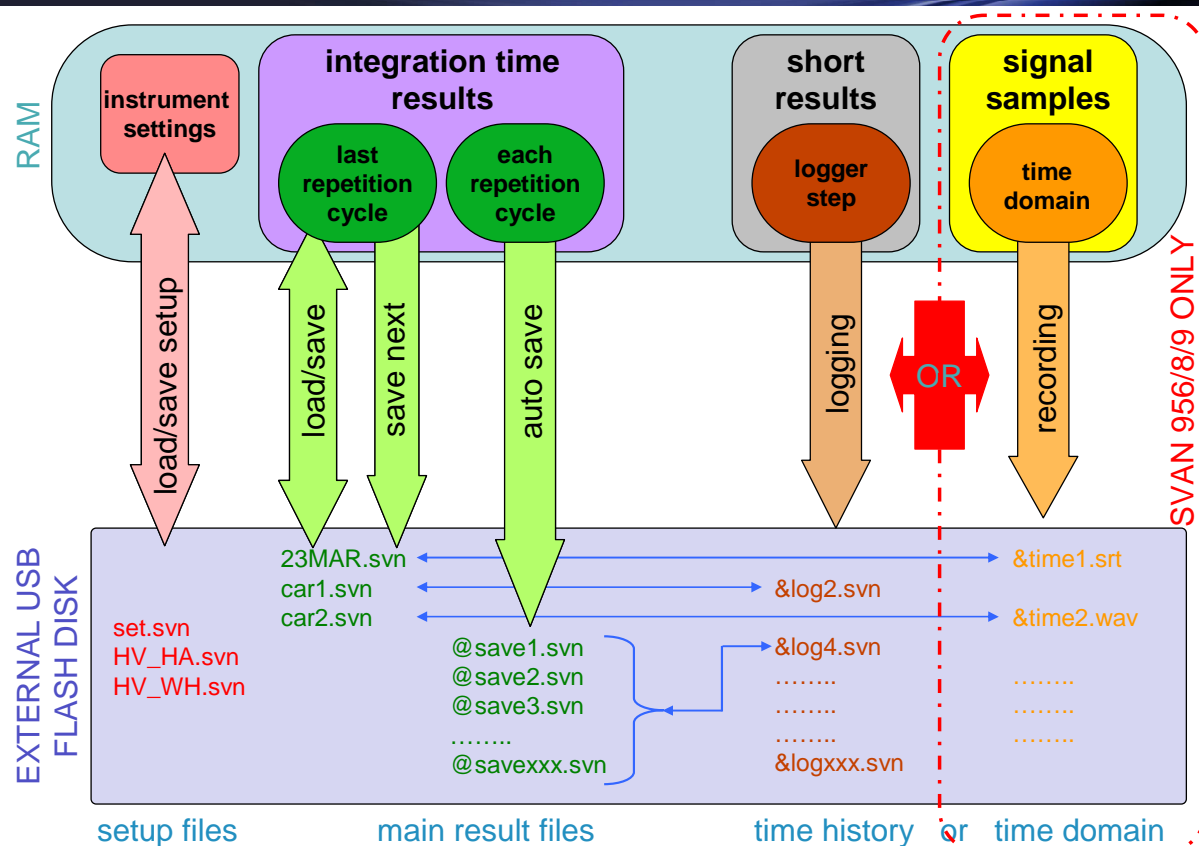
**Notice:** The instrument's logger memory is independent from the results and setup memory. The capacity of the available memory is equal to 32 MB and is divided between logger (15 859 224 bytes) and results and setup settings (16 252 428 bytes).



**Notice:** The **logger** files are created automatically (the usage of the **SAVE** is not required).

When the user connects to the instrument the **USB memory stick**, the data storing in the internal instrument's memory is not available any more. The user can only copy or move data from the internal memory of the device and store new data in the **USB memory stick**. The scheme of the memory organization of the instrument with the USB memory stick connected is presented below.

## MEMORY ORGANIZATION OF THE SVAN 95x instrument series with USB HOST



Scheme of the instrument's memory organisation with the USB-HOST and memory stick connected



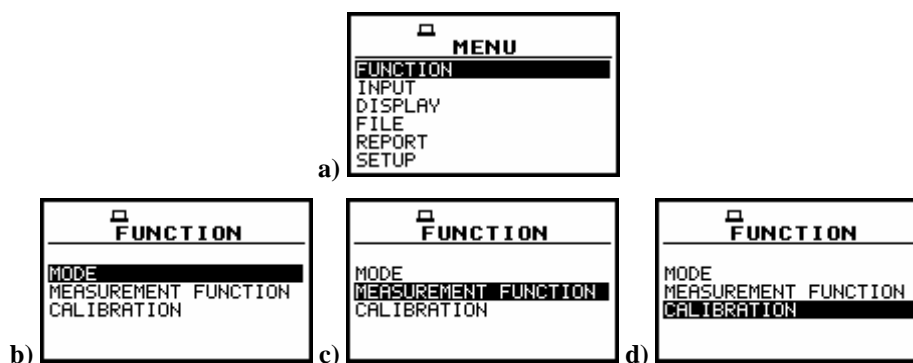
**Notice:** The connection to the **USB Host** socket the USB disk switches off the instrument's internal flash memory. Only copying and moving the files to the USB stick is possible. All file functions and remote commands are redirected to the USB disk. The internal flash memory is activated after disconnecting the USB disk from the instrument.



**Notice:** The disconnection of the USB disk during the data transmission can cause the lost of data saved in the USB disk as well as in the instrument's internal flash memory.

## 4 FUNCTIONS OF THE INSTRUMENT – FUNCTION

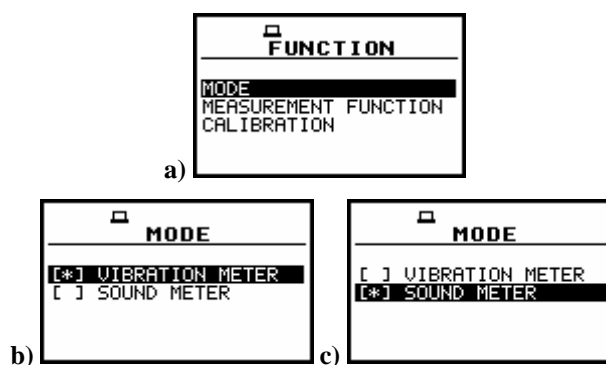
In order to select the **FUNCTION** list one has to press the **<MENU>** push-button, select by means of the **<▲>**, **<▼>** (or **<◀>**, **<▶>**) push-buttons the **FUNCTION** text and press the **<ENTER>**. The **FUNCTION** list contains three elements: **MODE**, **MEASUREMENT FUNCTION** and **CALIBRATION**. The list is closed and the instrument returns to the presentation mode after pressing the **<ESC>** push-button.



Displays with the main list; the **FUNCTION** text selected (a) and the **FUNCTION** list opened; the **MODE** selected (b) the **MEASUREMENT FUNCTION** selected (c) and the **CALIBRATION** selected (d)

### 4.1 Selecting the mode of the instrument – MODE

In order to select the required mode the user has to enter the **MODE** position in the **FUNCTION** sub-list using **<▲>**, **<▼>** push-buttons and press the **<ENTER>** one. A mode is selected by placing the special character in the line with the mode's name. The position of the character can be changed using the **<▲>**, **<▼>** push-buttons. After placing the character in the line with the option's name the user has to press the **<ENTER>** push-button.

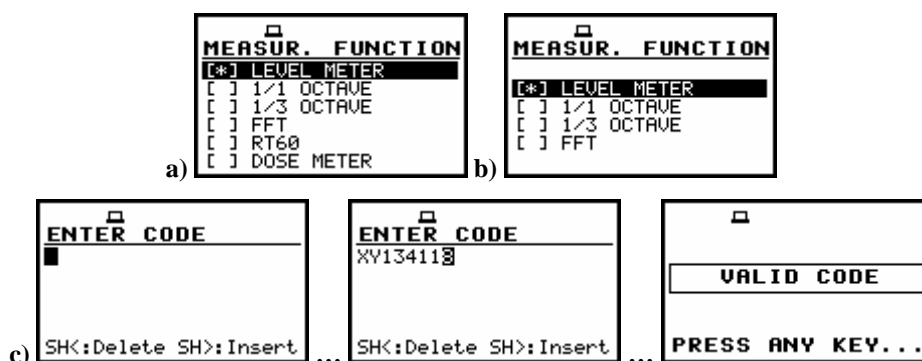


**FUNCTION** list opened; **MODE** selected (a) and **MEASUR. FUNCTION** sub-list opened with vibration meter mode selected (b) and sound meter mode selected (c)

### 4.2 Measurement functions of the instrument - MEASUREMENT FUNCTION

In order to select the required function the user has to enter the **MEASUREMENT FUNCTION** sub-list (to select the **MEASUREMENT FUNCTION** text using the **<▲>**, **<▼>** or **<◀>**, **<▶>** push-buttons and press the **<ENTER>** one, when this text is displayed inversely).

After entering the **MEASUREMENT FUNCTION** sub-list, the set of the available functions appears on the display (**LEVEL METER**, **1/1 OCTAVE**, **1/3 OCTAVE**, **DOSE METER**, **FFT** and **RT60** in the case **SOUND METER MODE** and **LEVEL METER**, **1/1 OCTAVE**, **1/3 OCTAVE**, **FFT** in the case of **VIBRATION METER MODE**). The special character marks currently active function.



MEASUREMENT FUNCTION windows opened in SM (a), in VM (b) and the activation of the optional function (c)

The main function of the instrument is the **measurement of sound or vibration level**. The other functions are optional and they broaden the applications of the instrument. They can be supported by the producer or purchased later. The producer activates the optional function bought with the instrument. The user should activate by himself the function purchased later.

The **sound LEVEL METER (SLM) mode** provides the user with the functions of the **SLM** meeting the IEC 61672:2002 standard for Type 1 accuracy and the functions of **VLM** meeting the ISO 8041:2005 standard. The instrument can also be used for the long-term acoustic monitoring using for this purpose the huge logger, in which the measurement results are stored.

The **required function** is selected by placing the special character in the line with the **proper** text. The position of the character can be changed using the <▲>, <▼> (or <◀>, <▶>) push-buttons. After placing the character in the line with the function's name the user has to press the <ENTER> push-button, which closes the **MEASUR. FUNCTION** sub-list.

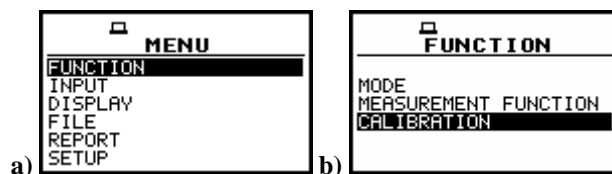


**Notice:** It is not possible to change the measurement function during the measurements. The instrument displays in this case for about 3 seconds the text: **"MEASUREMENT IN PROGRESS"**. In order to change the mode of the instrument the measurement must be finished!

### 4.3 Instrument's calibration - CALIBRATION

The instrument is factory calibrated with the supplied microphone for the standard environmental conditions. Because the microphone sensitivity is a function of the temperature, ambient pressure and humidity, when the absolute sound pressure level value is important, the calibration of the measurement channel has to be done. In order to select a calibration function the user has to enter the **CALIBRATION** sub-list (to select the **CALIBRATION** text using the <▲>, <▼> or <◀>, <▶> push-buttons and press the <ENTER> one, when this text is displayed inversely).

The **CALIBRATION** sub-list consists of four positions: **BY SENSITIVITY**, **BY MEASUREMENT**, which are used to perform the calibration, **LAST CALIBRATION**, which contains the list of the performed in the past the calibration measurements and the obtained results and **TEDS**, which is used for automatical reading of vibration transducer parameters.



Displays with the main list; the FUNCTION text selected (a), the FUNCTION list opened, the CALIBRATION text selected (b)



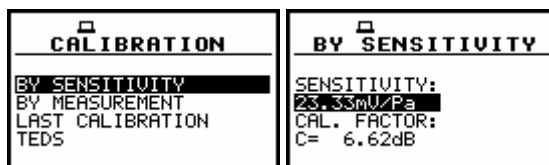


**Note:** The calibration level and the calibration result is expressed in different units depending on the settings of the instrument. The metric or non-metric vibration units are set in the **VIBRATION UNITS** (path: MENU / SETUP / VIBRATION UNITS). Additionally, the linear or logarithmic units are set in the **DISPLAY SCALE** (path: MENU / DISPLAY / DISPLAY SETUP / DISPLAY SCALE).

#### 4.3.1 The calibration BY SENSITIVITY in the case of acoustic signal

The calibration by the microphone's sensitivity introduction can be conducted in the following way:

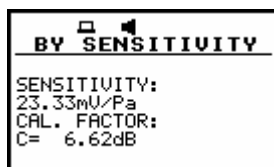
1. Select this type of the calibration (highlight the **BY SENSITIVITY** text) from the **CALIBRATION** sub-list and press the <ENTER> push-button.



Displays with the selected calibration mode and after entering this mode



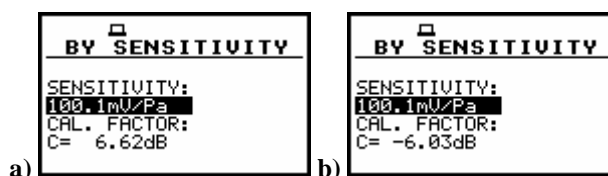
**Notice:** It is not possible to calibrate the instrument during the execution of the measurements. It is possible to open different lists and sub-lists but the positions in these lists are not displayed inversely and so - not accessible. The "Loudspeaker" icon indicates that the instrument is in the measurement process. In order to change the sensitivity the measurement must be finished!



Displays with the SENSITIVITY positions (path: MENU / FUNCTION / CALIBRATION / BY SENSITIVITY) not accessible

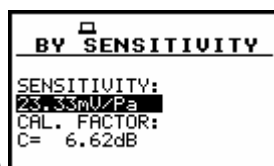
2. Set the sensitivity of the microphone taken from its calibration certificate using the <<>, <>> push-buttons and then press the <ENTER> one.

The calibration factor is calculated, after pressing the <ENTER> push-button, in the relation to 50.0 mV / Pa. In order to avoid the calculation the user has to leave the **CALIBRATION** without pressing <ENTER>. For the sensitivity of the microphone higher than 50.0 mV / Pa the calibration factor is negative.



Displays during setting the sensitivity higher than 50.0 mV / Pa (a) and after pressing the <ENTER> push-button with the calibration factor calculated (b)

For the sensitivity of the microphone lower than 50.0 mV / Pa the calibration factor is positive.

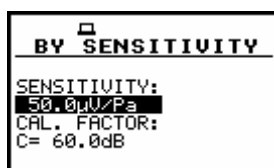


a)

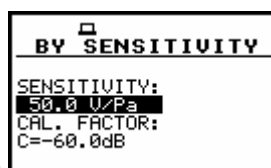
Displays during setting the sensitivity lower than 50.0 mV / Pa with the calculated calibration factor

The lowest applicable value of the sensitivity to be introduced is equal to 50.0  $\mu$ V / Pa (it conforms to the calibration factor equal to 60.0 dB) and the highest one – 50.0 V / Pa (calibration factor equal to -60.0 dB).

In order to return to the **CALIBRATION** sub-list the user has to press the **<ESC>** push-button.



a)



b)

Displays with the lowest possible sensitivity and the highest calibration factor (a) and the highest sensitivity and the lowest calibration factor (b)

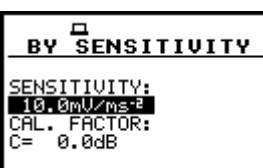
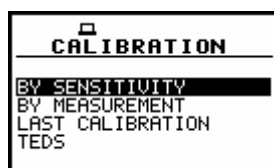


**Notice:** The calibration factor is always added to the results of measurements and analysis (1/1 OCTAVE, 1/3 OCTAVE, FFT, etc.).

#### 4.3.2 Calibration BY SENSITIVITY in the case of vibration signal

The calibration by the accelerometer's sensitivity introduction can be conducted in the following way:

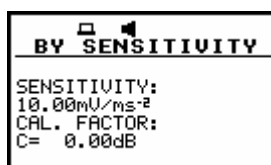
1. Select this type of the calibration (highlight the **BY SENSITIVITY** text) from the **CALIBRATION** sub-list and press the **<ENTER>** push-button.



Displays with the selected calibration mode and after entering this mode



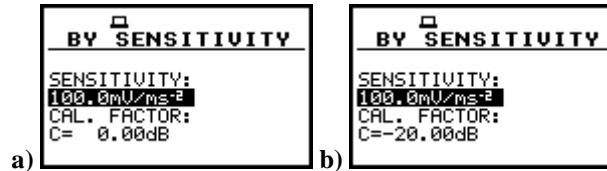
**Notice:** It is not possible to calibrate the instrument during the execution of the measurements. It is possible to open different lists and sub-lists but the positions in these lists are not displayed inversely and so - not accessible. The "Loudspeaker" icon indicates that the instrument is in the measurement process. In order to change the sensitivity the measurement must be finished!



Displays with the SENSITIVITY positions (*path: MENU / FUNCTION / CALIBRATION / BY SENSITIVITY*) not accessible

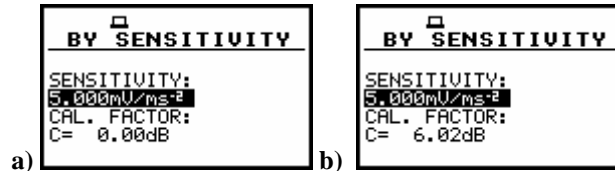
2. Set the sensitivity of the accelerometer taken from its calibration certificate using the <<>, <>> push-buttons and then press the <ENTER> one.

The calibration factor is calculated, after pressing the <ENTER> push-button, in the relation to  $10.0 \text{ mV} / \text{ms}^{-2}$ . In order to avoid the calculation the user has to leave the **CALIBRATION** without pressing <ENTER>. For the sensitivity of the accelerometer higher than  $10.0 \text{ mV} / \text{ms}^{-2}$  the calibration factor is negative.



Displays during setting the sensitivity higher than  $10.0 \text{ mV} / \text{ms}^{-2}$  (a) and after pressing the <ENTER> push-button with the calibration factor calculated (b)

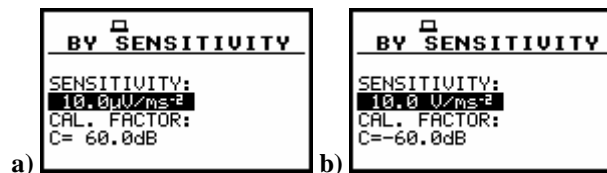
For the sensitivity of the accelerometer lower than  $10.0 \text{ mV} / \text{ms}^{-2}$  the calibration factor is positive.



Displays during setting the sensitivity lower than  $10.0 \text{ mV} / \text{ms}^{-2}$  (a) and after pressing the <ENTER> push-button with the calibration factor calculated (b)

The lowest applicable value of the sensitivity to be introduced is equal to  $10.0 \mu\text{V} / \text{ms}^{-2}$  (it conforms to the calibration factor equal to 60.0 dB) and the highest one –  $10.0 \text{ V} / \text{ms}^{-2}$  (calibration factor equal to -60.0 dB).

In order to return to the **CALIBRATION** sub-list the user has to press the <ESC> push-button.



Displays with the lowest possible sensitivity and the highest calibration factor (a) and the highest sensitivity and the lowest calibration factor (b)



**Note:** The calibration factor is always added to the results in the **VIBRATION LEVEL METER** mode (VLM), 1/1 OCTAVE, 1/3 OCTAVE and the FFT analysis modes.

#### 4.3.3 The calibration BY MEASUREMENT in the case of acoustic signal

The calibration for the sound measurements can be done in the following way:

1. Select the calibration by measurement (highlight the **BY MEASUREMENT** text) from the **CALIBRATION** sub-list and press the <ENTER> push-button.

2. Attach the acoustic calibrator SV 30A (or equivalent 114 dB / 1000 Hz) to the microphone of the instrument.



**Notice:** It is also possible to use the pistonphone, which generates the signal ca 124 dB or different type of acoustic calibrator dedicated for 1/2" microphones. **In any case, before starting the calibration measurement, the user has to set** (by means of the <◀>, <▶> push-buttons) **the level of the signal generated by the given calibrator (CAL. LEVEL position of BY MEASUREMENT sub-list), which is usually stated in the calibration certificate of the unit** (the value of the **CAL. LEVEL** set by the producer of **G7** is equal to 113.9 dB, the calibration factor value for 7052H microphone is within the range of 6 to 7 dB; default value is equal to 6.62 dB ).

3. Switch on the calibrator and wait ca 30 seconds before starting the calibration measurement.

4. Start the calibration measurement by pressing the <START / STOP> push-button.

The measurement time is set to 5 seconds with 5 seconds delay. During the calibration measurement the <ESC> and <PAUSE> push-buttons do not operate but it is possible to stop the measurement using the <START / STOP> one. It is not recommended to stop the calibration measurement before programmed 5 seconds period!

BY MEASUREMENT	BY MEASUREMENT	BY MEASUREMENT
CAL. LEVEL: 113.90dB CALIBRATION DELAY = 3 s	CAL. LEVEL: 113.90dB CALIBRATION DELAY = 1 s	CAL. LEVEL: 113.90dB CAL. MEASURE LEQ = 107.32dB C

Displays during the calibration measurement

Waiting for the start of the measurements the **DELAY** is counted down on the display. After the end of the measurement, its result is displayed on the display in the bottom line.

**It is recommended to repeat the calibration measurement few times.** The obtained results should be almost the same (with  $\pm 0.1$  dB difference). The reasons for the unstable results are as follows:

- the calibrator is not properly attached to the instrument,
- there are external disturbances,
- the calibrator or the measurement channel (the microphone, the preamplifier or the instrument itself) are damaged.



**Notice:** During the calibration measurement, the external disturbances (acoustic noise or vibrations) should not exceed the value of 100 dB.

5. Press the <ENTER> push-button in order to accept the measurement result.

The calibration factor is calculated, stored and displayed (cf. next Figure) after pressing the <ENTER> push-button.



**Notice:** The user has to press the <ESC> push-button in order to quit the calibration procedure without saving the calibration factor.

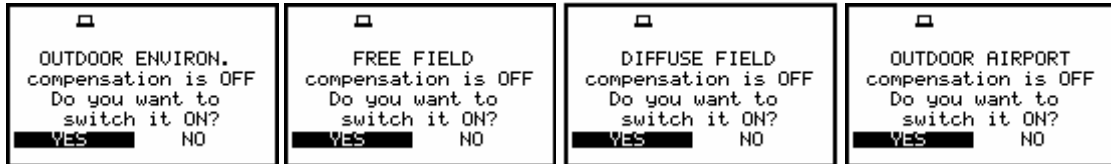
BY MEASUREMENT	BY MEASUREMENT
CAL. LEVEL: 113.90dB CAL. RESULT: LEQ = 107.32dB C	CAL. LEVEL: 113.90dB CAL. FACTOR: C = 6.58dB

a)

b)

Displays after the measurements (a) and after the acceptance of the value of the calibration factor (b)

During the calibration by measurement the compensation filter set in the COMPENSATION FILTER window (*path: SETUP/ COMPENSATION FILTER*) is automatically switched off. At the first measurement after the calibration on the display appears a question whether the user wants to switch on the filter which was switched on before the calibration again. The selection of **YES** or **NO** is made with **<◀>**, **<▶>** push- buttons and for confirmation the user has to press **<ENTER>**. After switching on the compensation filter the first measurement is made with 5 seconds delay.

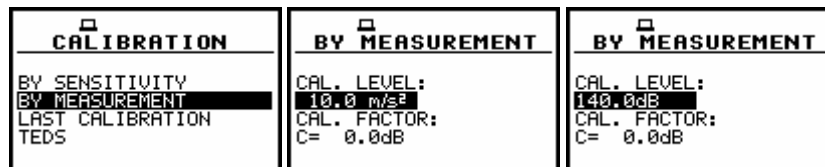


Displays with the question about switching on the compensation filter

#### 4.3.4 The calibration BY MEASUREMENT in the case of vibration signal

The calibration by measurements can be conducted in the following way:

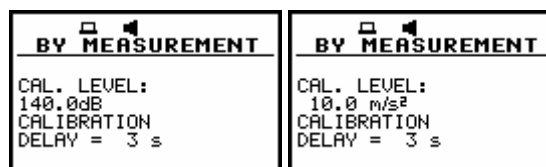
1. Select the calibration by measurement (highlight the **BY MEASUREMENT** text) from the CALIBRATION sub-list and press the **<ENTER>** push-button.



Displays with the selected calibration mode and after entering this mode

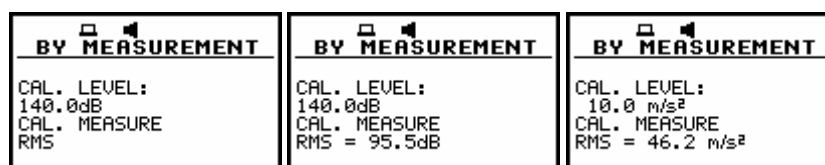
2. Attach the vibration calibrator to the instrument's accelerometer.
3. Switch on the calibrator and wait approximately 30 seconds before starting the calibration measurement.
4. Start the calibration measurement by pressing the **<START / STOP>** push-button.

The measurement starts after 5 seconds delay. The measurement time is also predefined to 5 seconds. During the calibration period, the **<ESC>** and **<PAUSE>** push-buttons do not operate but it is possible to stop the measurement using the **<START / STOP>** push-button. Waiting for the calibration measurement to begin, a **DELAY** is counted down.



Displays while the instrument is waiting for the calibration measurement to commence

At the end of the measurement, the result is displayed on the display in the bottom line.



## Displays during the calibration measurements

BY MEASUREMENT	BY MEASUREMENT
CAL. LEVEL: 140.0dB	CAL. LEVEL: 10.0 m/s <sup>2</sup>
CAL. RESULT: RMS = 95.4dB	CAL. RESULT: RMS = 46.2 m/s <sup>2</sup>

## Displays after the calibration measurements

The calibration procedure should be repeated a few times to ensure the integrity of the calibration. The obtained results should be almost identical (with  $\pm 0.1$  dB difference). The reasons for unstable results are as follows:

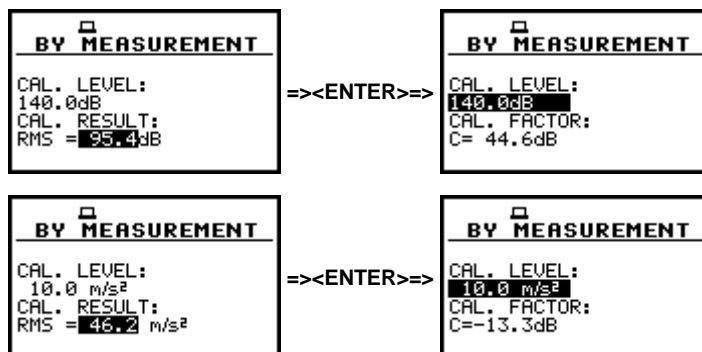
- the calibrator is not properly attached to the instrument,
- there are external disturbances,
- the calibrator or the measurement channel (the accelerometer or the instrument itself) are damaged.



**Note:** During the calibration period, external disturbances (vibrations or acoustic noise) should not exceed 100 dB.

## 5. Press the &lt;ENTER&gt; push-button in order to accept the measurement result.

The calibration factor is calculated, stored and displayed (cf. Fig. below for logarithmic and linear scale – path: MENU / DISPLAY / DISPLAY SETUP / DISPLAY SCALE / SCALE) after pressing the <ENTER> push-button.



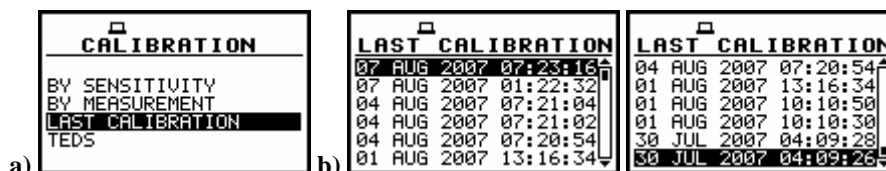
## Displays after pressing the &lt;ENTER&gt; push-button (after calculation of the calibration factor value)



**Note:** The calibration factor is always added to the measurement results in the **LEVEL METER** mode and to those coming from the frequency analysis (1/1 OCTAVE, 1/3 OCTAVE and FFT).

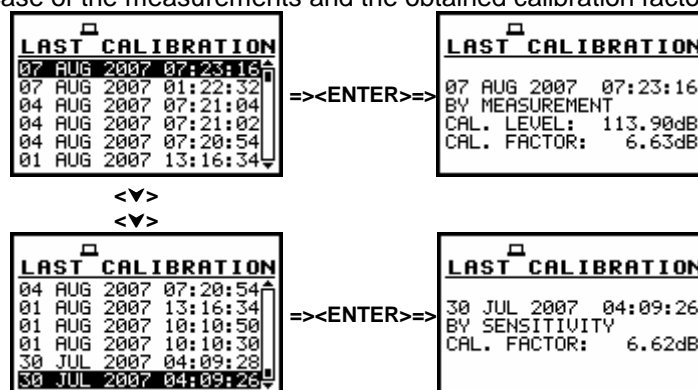
## 4.3.5 History of the calibration - LAST CALIBRATION

In order to enter the **LAST CALIBRATION** window in which up to last ten calibration records are remembered, the user has to select the proper text in the **CALIBRATION** window using the <▲>, <▼> push-buttons and press the <ENTER> one.



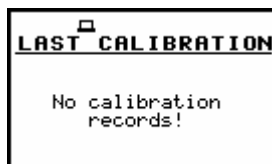
Displays in the **CALIBRATION** window; the **LAST CALIBRATION** text selected (a)  
the **LAST CALIBRATION** window opened with ten calibration records (b)

In order to review the calibration record, the user has to select the required line in the **LAST CALIBRATION** window using the **<▲>**, **<▼>** push-buttons and press the **<ENTER>** one. The opened window contains the date and time of the performed calibration measurement, the way the calibration was done (**BY MEASUREMENT** or **BY SENSITIVITY**), the desired calibration level (**CAL. LEVEL**) in the case of the measurements and the obtained calibration factor (**CAL. FACTOR**).



Displays with the **LAST CALIBRATION** records

In the case when the calibration measurements were not performed, the **LAST CALIBRATION** window does not contain any record. The contents of this window is cleared after the **CLEAR SETUP** operation.



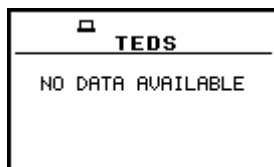
Display with the empty **LAST CALIBRATION** window

#### 4.3.6 Automatic reading of a vibration transducer parameters – TEDS

The **TEDS (Transducer Electronic Data Sheet)** function enables automatic reading by the instrument the sensitivity and other electronic parameters of vibration transducer. This function is under development. In order to enter the **TEDS** window the user has to select the **TEDS** text in the **CALIBRATION** list using **<▲>**, **<▼>** push-buttons and press the **<ENTER>** one.



**CALIBRATION** window; **TEDS** text highlighted

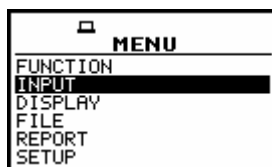


**TEDS window opened; NO DATA AVAILABLE message**



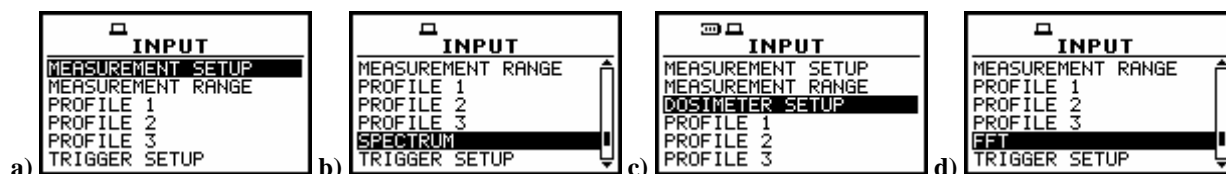
## 5 MEASUREMENT PARAMETERS SETTING - INPUT

The profile parameters can be set in the **INPUT** list, which can be entered after pressing the **<MENU>** push-button, then selecting by means of the **<▲>**, **<▼>** (or **<◀>**, **<▶>**) push-buttons the **INPUT** text and finely pressing the **<ENTER>** one.



Main list with the **INPUT** text selected

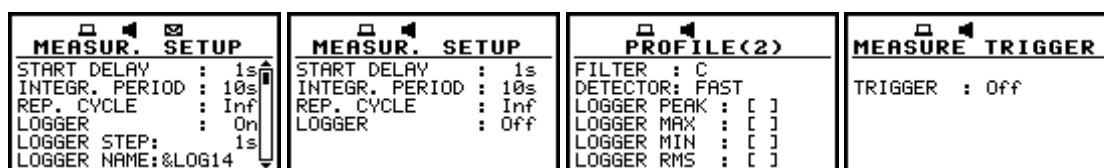
The **INPUT** list in the **LEVEL METER** contains the elements which enable one the independent programming of the measurement parameters (**MEASUREMENT SETUP**), the input range (**MEASUREMENT RANGE**), parameters of three profiles (**PROFILE 1**, **PROFILE 2** and **PROFILE 3**) and the trigger function (**TRIGGER SETUP**). In the case of **1/1 OCTAVE** and **1/3 OCTAVE** on the display appears **SPECTRUM** position. In the case of the **DOSE METER** instead of the trigger function there is a **DOSIMETER SETUP**. In the case of **FFT analyser** on the display appears **FFT** position. In the cases of **RT60** there is not any new position in the **INPUT** list – **RT60** position appears in the **SETUP** list.



**INPUT** list in the **LEVEL METER** (a), in **1/1 OCTAVE** and **1/3 OCTAVE** analyser (b), in **DOSE METER** (c), and in **FFT analyser** (d)



**Notice:** Any parameter in the **INPUT** list can be changed only when the instrument does not execute a measurement. The possibility of a change is signalled by displaying inversely a parameter's field. Moreover, normally displayed field means that the parameter cannot be changed. The "Loudspeaker" icon indicates that the instrument is performing the measurements.



Displays with not active sub-lists of **INPUT** list during measurement



**Notice:** In the case of settings for vibration measurements the parameters can be presented in **LOGARITHMIC** (decibels) or **LINEAR** ( $m/s^2$ ) units. It depends on the **DISPLAY SCALE** position (path: **MENU / DISPLAY / DISPLAY SETUP / DISPLAY SCALE/ LOG** or **LIN**), e.g.  $10 m/s^2$  can be presented as **140 dB**.

## 5.1 Selection of measurement parameters - MEASUREMENT SETUP

The **MEASUREMENT SETUP** is opened after the selection of the **MEASUREMENT SETUP** text from the **INPUT** list by means of the **<▲>**, **<▼>** (or **<▲>**, **<▼>** with **<SHIFT>**) push-buttons and pressing the **<ENTER>** one. The **MEASUREMENT SETUP** consists of the parameters, which can be set or switched on / off, namely: the delay of the start of measurements (**START DELAY**), the integration period (**INTEGR. PERIOD**), the repetition of the measurement cycles (**REP. CYCLE**) and the logger activation or deactivation (**LOGGER**). If the logger is active, the user can set the logging period (**LOGGER STEP**) and give a name to the logger's file (**LOGGER NAME**). In order to change the displayed inversely parameter the user has to press the **<▲>**, **<▼>** push-buttons. The confirmation of any change made in the sub-list requires pressing the **<ENTER>** push-button, which simultaneously closes the sub-list. The **MEASUREMENT SETUP** is closed ignoring any changes made in there, after pressing any time the **<ESC>** push-button.

MEASUR. SETUP	MEASUR. SETUP	MEASUR. SETUP
START DELAY : 1s	START DELAY : 1s	START DELAY : 1s
INTEGR. PERIOD : 1s	INTEGR. PERIOD : Inf	INTEGR. PERIOD : 1s
REP. CYCLE : Inf	REP. CYCLE : Inf	REP. CYCLE : 2
LOGGER : Off	LOGGER : Off	LOGGER : Off

Displays with the **MEASUREMENT SETUP** window

### 5.1.1 Setting time delay before the start of measurements - START DELAY

The **START DELAY** defines the delay period from the **<START / STOP>** push-button pressing to the start of the measurements (the digital filters of the instrument analyse constantly the input signal even when the measurements are stopped). This delay period can be set from **0 second** to **60 seconds** (with 1 second step by means of the **<<>**, **<>>** push-buttons and with 10 seconds step with the **<<>**, **<>>** push-buttons pressed together with the **<SHIFT>** one). The **<ENTER>** push-button must be pressed for the confirmation of the selection, which closes simultaneously the **MEASUREMENT SETUP** window.

MEASUR. SETUP	MEASUR. SETUP	MEASUR. SETUP
START DELAY : 0s	START DELAY : 1s	START DELAY : 2s
INTEGR. PERIOD : 1s	INTEGR. PERIOD : 1s	INTEGR. PERIOD : 1s
REP. CYCLE : Inf	REP. CYCLE : Inf	REP. CYCLE : Inf
LOGGER : Off	LOGGER : Off	LOGGER : Off

**MEASUREMENT SETUP** windows; the setting of the **START DELAY** with 1-second step

MEASUR. SETUP	MEASUR. SETUP	MEASUR. SETUP
START DELAY : 10s	START DELAY : 20s	START DELAY : 60s
INTEGR. PERIOD : 1s	INTEGR. PERIOD : 1s	INTEGR. PERIOD : 1s
REP. CYCLE : Inf	REP. CYCLE : Inf	REP. CYCLE : Inf
LOGGER : Off	LOGGER : Off	LOGGER : Off

**MEASUREMENT SETUP** windows; the setting of the **START DELAY** with 10-seconds step



**Notice:** The minimum delay period is equal to 0 second. In the **CALIBRATION** mode, the delay period is equal to 5 seconds.

### 5.1.2 Setting the integration period - INTEGR. PERIOD

The **INTEGR. PERIOD** defines the period in which the signal is being averaged during the sound level measurements. The definitions of the measurement results in which the integration period is used is

given in App. D. The required value of this parameter can be set by means of the <<>, <>> and confirmed by the <ENTER> push-button.

The integration period (**INTEGR. PERIOD**) can be set (by pressing the <>> (or <>> with <SHIFT>) push- buttons):

- From **1 s** to **59 s** (with **1 second** or **10 seconds** step).

MEASUR. SETUP	MEASUR. SETUP	MEASUR. SETUP
START DELAY : 1s	START DELAY : 1s	START DELAY : 1s
INTEGR. PERIOD : <b>1s</b>	INTEGR. PERIOD : <b>2s</b>	INTEGR. PERIOD : <b>3s</b>
REP. CYCLE : Inf	REP. CYCLE : Inf	REP. CYCLE : Inf
LOGGER : Off	LOGGER : Off	LOGGER : Off

MEASUREMENT SETUP windows; the setting of the INTEGR. PERIOD with 1-second step

MEASUR. SETUP	MEASUR. SETUP	MEASUR. SETUP
START DELAY : 1s	START DELAY : 1s	START DELAY : 1s
INTEGR. PERIOD : <b>13s</b>	INTEGR. PERIOD : <b>23s</b>	INTEGR. PERIOD : <b>33s</b>
REP. CYCLE : Inf	REP. CYCLE : Inf	REP. CYCLE : Inf
LOGGER : Off	LOGGER : Off	LOGGER : Off

MEASUREMENT SETUP windows; the setting of the INTEGR. PERIOD with 10-seconds step

- From **1 m** (min) to **59 m** (with **1 minute** or **10 minutes** step).

MEASUR. SETUP	MEASUR. SETUP	MEASUR. SETUP	MEASUR. SETUP
START DELAY : 1s	START DELAY : 1s	START DELAY : 1s	START DELAY : 1s
INTEGR. PERIOD : <b>2m</b>	INTEGR. PERIOD : <b>3m</b>	INTEGR. PERIOD : <b>13m</b>	INTEGR. PERIOD : <b>23m</b>
REP. CYCLE : Inf	REP. CYCLE : Inf	REP. CYCLE : Inf	REP. CYCLE : Inf
LOGGER : Off	LOGGER : Off	LOGGER : Off	LOGGER : Off

MEASUREMENT SETUP windows; the setting of the INTEGR. PERIOD with 1 and 10-minutes step

- From **1 h** to **24 h** (with **1 hour** or **10 hours** step). It is also possible to set **Inf** value.

MEASUR. SETUP	MEASUR. SETUP	MEASUR. SETUP	MEASUR. SETUP
START DELAY : 1s	START DELAY : 1s	START DELAY : 1s	START DELAY : 1s
INTEGR. PERIOD : <b>2h</b>	INTEGR. PERIOD : <b>12h</b>	INTEGR. PERIOD : <b>22h</b>	INTEGR. PERIOD : <b>Inf</b>
REP. CYCLE : Inf	REP. CYCLE : Inf	REP. CYCLE : Inf	REP. CYCLE : Inf
LOGGER : Off	LOGGER : Off	LOGGER : Off	LOGGER : Off

MEASUREMENT SETUP windows; the setting of the INTEGR. PERIOD with 10-hours step

Additionally, the predefined periods: **1 m**, **5 m**, **15 m**, **1 h**, **8 h** and **24 h**, which are enumerated in the standards, are also available (by pressing the <<> push-button or <<> with <SHIFT>; these values are placed in the mentioned above sequence on the left in relation to **1 s**).

MEASUR. SETUP	MEASUR. SETUP	MEASUR. SETUP
START DELAY : 1s	START DELAY : 1s	START DELAY : 1s
INTEGR. PERIOD : <b>1m</b>	INTEGR. PERIOD : <b>5m</b>	INTEGR. PERIOD : <b>15m</b>
REP. CYCLE : Inf	REP. CYCLE : Inf	REP. CYCLE : Inf
LOGGER : Off	LOGGER : Off	LOGGER : Off

MEASUR. SETUP	MEASUR. SETUP	MEASUR. SETUP
START DELAY : 1s	START DELAY : 1s	START DELAY : 1s
INTEGR. PERIOD : <b>1h</b>	INTEGR. PERIOD : <b>8h</b>	INTEGR. PERIOD : <b>24h</b>
REP. CYCLE : Inf	REP. CYCLE : Inf	REP. CYCLE : Inf
LOGGER : Off	LOGGER : Off	LOGGER : Off

Displays during setting the predefined INTEGR. PERIOD sequence

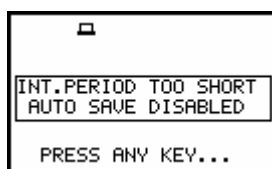


**Notice:** In the case of switching on the **AUTO SAVE** function, the minimum value of the integration period should be equal to 10 seconds.



**Notice:** In the **DOSE METER** the integration period cannot be set for the value greater than 8 hours.

If the user wants to switch on **AUTO SAVE** option (path: **MENU / FILE / SAVE OPTIONS / AUTO SAVE**) the integration period value has to be greater or equal than 10 seconds. When **AUTO SAVE** option was switched on and new entered integration period value is less than 10 seconds **AUTO SAVE** option switches off and **INT.PERIOD TOO SHORT / AUTO SAVE DISABLED** message appears on the display.



Display, when the **INT.PERIOD** is too short for **AUTO SAVE** option

### 5.1.3 Setting the number of repetition of measurement cycles - **REP. CYCLE**

The **REP. CYCLE** defines the number of cycles (with the measurement period defined in the **INTEGR. PERIOD**) which should be performed by the instrument. The required parameter can be set by means of the **<<>**, **<>>** push-buttons (with the step equal to 1) or by means of the **<<>**, **<>>** push-buttons pressed together with the **<SHIFT>** one (with the step equal to 20). The selected value is accepted by pressing the **<ENTER>** push-button, which closes the **MEASUREMENT SETUP** window. The **Inf** value denotes the infinite repetition of the measurements (until the pressing the **<START / STOP>** push-button or after receiving the remote control code). The **REP. CYCLE** number values are within the limits [1, 1000].

MEASUR. SETUP	MEASUR. SETUP	MEASUR. SETUP	MEASUR. SETUP
START DELAY : 1s	START DELAY : 1s	START DELAY : 1s	START DELAY : 1s
INTEGR. PERIOD : 1s	INTEGR. PERIOD : 1s	INTEGR. PERIOD : 1s	INTEGR. PERIOD : 1s
REP. CYCLE : Inf	REP. CYCLE : 1	REP. CYCLE : 2	REP. CYCLE : 3
LOGGER : Off	LOGGER : Off	LOGGER : Off	LOGGER : Off

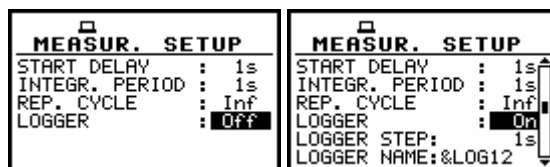
**REP. CYCLE** setting with the step equal to one

MEASUR. SETUP	MEASUR. SETUP	MEASUR. SETUP	...	MEASUR. SETUP
START DELAY : 1s	START DELAY : 1s	START DELAY : 1s		START DELAY : 1s
INTEGR. PERIOD : 1s	INTEGR. PERIOD : 1s	INTEGR. PERIOD : 1s		INTEGR. PERIOD : 1s
REP. CYCLE : 20	REP. CYCLE : 40	REP. CYCLE : 60		REP. CYCLE : 1000
LOGGER : Off	LOGGER : Off	LOGGER : Off		LOGGER : Off

**REP. CYCLE** setting with the step equal to 20

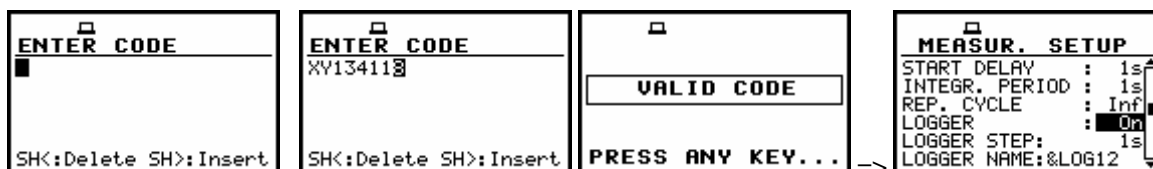
### 5.1.4 Logger functionality switching On / Off - LOGGER

The **LOGGER** switches on and off the functionality, which enables the user to save in a file the selected results from three profiles with the defined period. The **LOGGER** can be activated and deactivated by means of the <◀>, <▶> push-buttons and accepted by the <ENTER> one. The acceptance closes simultaneously the **MEASUREMENT SETUP** window. Any changes are ignored after pressing the <ESC> push-button.



Displays with the **LOGGER** deactivated and activated

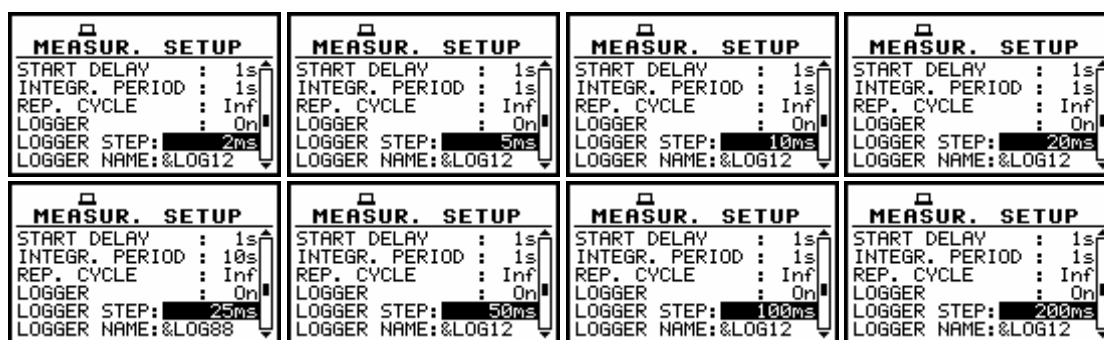
The **LOGGER** functionality is not included in the standard set of the instrument. It can be bought together with the instrument ordering the proper option or can be purchased by the user in the future. In the latter case, after selecting **On** value, the user has to introduce special code activating the functionality. After successful activation, the logger remains available and the instrument never more asks for the code.



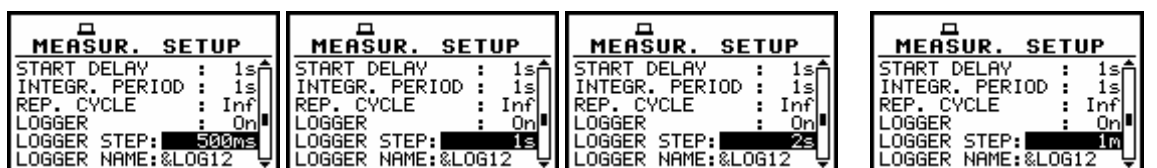
Displays during setting the **LOGGER STEP**; available values in a sequence 1, 2, 5

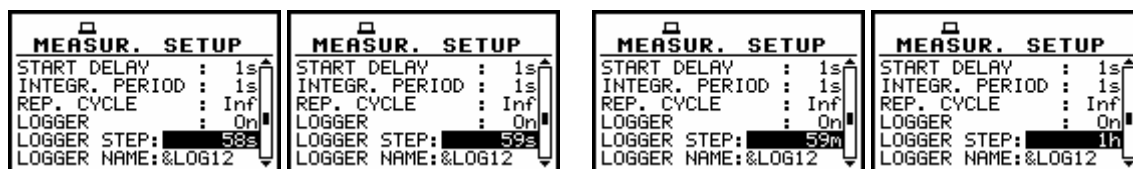
### 5.1.5 Setting time period between two writings to the logger's file - **LOGGER STEP**

The **LOGGER STEP** defines the period of the data logging in a file. It can be set from **2 ms** to **1 s** in 1, 2, 5 sequence, the values from 1 second to 59 seconds, the values from 1 minute to 59 minute and 1 hour. The required parameter can be set by means of the <◀>, <▶> push-buttons with the single step and by means of the <◀>, <▶> with <SHIFT> with the incremented one. The selection is accepted by the <ENTER> one, which closes simultaneously the **MEASUREMENT SETUP** window. Any changes are ignored after pressing the <ESC> push-button.



**LOGGER STEP** setting; available values in milliseconds

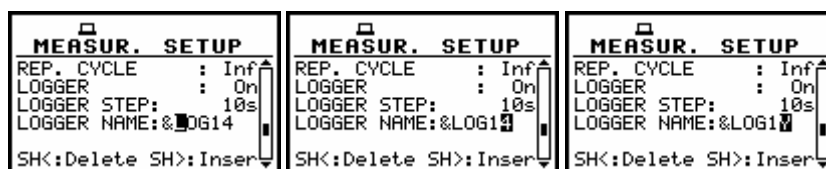




LOGGER STEP setting; available values from 500 milliseconds to 1 hour

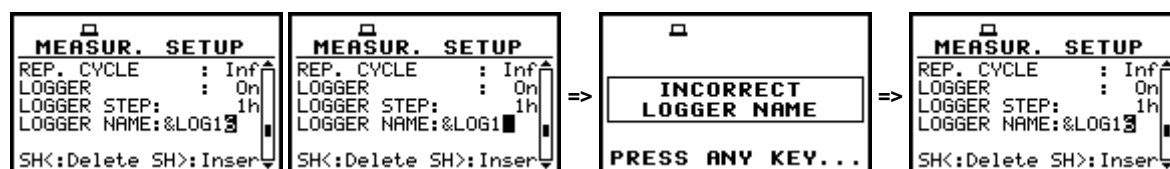
### 5.1.6 Logger file name edition - LOGGER NAME

The **LOGGER NAME** enables the user to name the logger file. The default one is &LOG. The name cannot be longer than eight characters including not edited first one character &. After entering this line, the special help is displayed in the display's last line. The name edition is performed similarly to the name edition in the **FILE NAME** line of the **SAVE** or **SAVE SETUP** window. The edition process is presented below. The displayed inversely character is currently edited. The <<>, <>>, <<>, <>> and <SHIFT> push-buttons are used for editing the name. One can select the proper position of the character in the edited text using the <<>, <>> push-buttons. The available ASCII characters can be changed using the <A> (or <V>) push-button pressed together with the <SHIFT> one. The subsequent digits, underline, big letters and space appear on the display in the inversely displayed position after each pressing of the mentioned above push-buttons.



LOGGER NAME edition in MEASUREMENT SETUP

The edited name is accepted and the file is saved after pressing the <ENTER> push-button. The special warning is displayed in the case the file with the edited name already exists in the memory. The instrument waits then for a reaction of the user (any push-button should be pressed except the <SHIFT> or the <ALT> one).



Displays during the attempt of overwriting the existing file

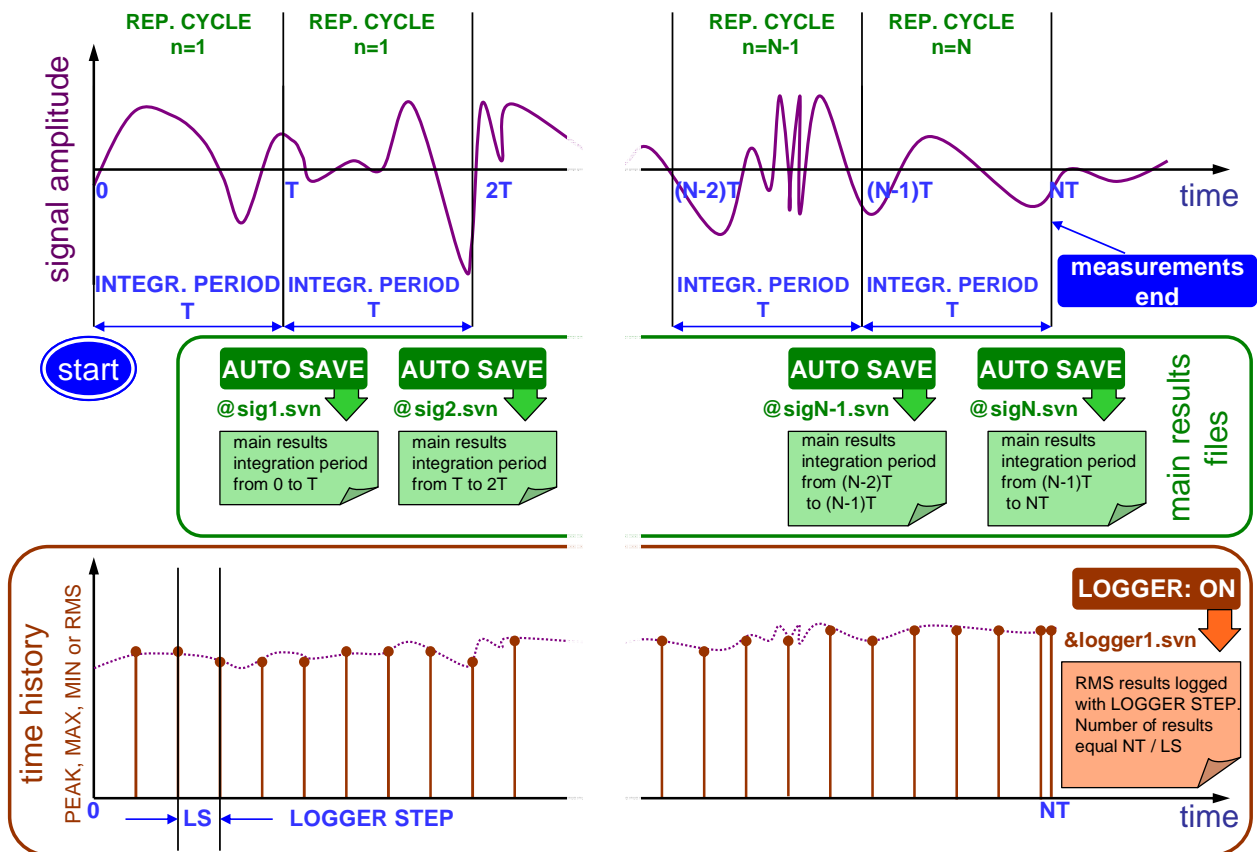
The main measurement results (cf. App. B):

- **L<sub>Peak</sub>, L<sub>Max</sub>, L<sub>Min</sub>, SPL, LEQ, L<sub>den</sub>, L<sub>tm3</sub>, L<sub>tm5</sub>**, for **SOUND LEVEL METER**, 1/1 OCTAVE, 1/3 OCTAVE, FFT and RT60
- **L<sub>Peak</sub>, L<sub>Max</sub>, L<sub>Min</sub>, SPL, LEQ, L<sub>den</sub>, L<sub>tm3</sub>, L<sub>tm5</sub>, LAV and TLAV** for **DOSE METER**
- **PEAK, P-P, MAX, MIN, RMS, VDV** for **VIBRATION LEVEL METER**, 1/1 OCTAVE, 1/3 OCTAVE, and FFT

are calculated in the period set in the **INTEGR. PERIOD**. These results can be saved in the result files of the instrument's memory by means of the **SAVE** or **SAVE NEXT** function (*path: MENU / FILE / SAVE*). In the case the **INTEGR. PERIOD** is greater than 9 seconds, it can be done also by means of the **AUTO SAVE** operation. The name of the file for that operation is set in the **FILE NAME** window (*path: MENU / FILE / AUTO SAVE / FILE NAME*). In the case the **REP. CYCLE** is greater than one, the **AUTO SAVE** operation will be performed after the period set in the **INTEGR. PERIOD**. The name of the file with the main results is changed after each saving.

In the same, when the **LOGGER** is **On**, the partial measurement results are calculated in the period set in the **LOGGER STEP**. Up to 12 results can be logged simultaneously from three independent profiles of the instrument (**PEAK / MAX / MIN / RMS** for sound measurements or **PEAK/ P-P/ MAX/ RMS** for vibration measurements from each profile (*path: MENU / INPUT / PROFILE x*, where  $x = 1, 2$  and  $3$ )) with time step down to 2 ms. These results are saved in one logger's file memory of the instrument in the **SOUND** or **VIBRATION LEVEL METER** as well as for other functions. The name of the file is set in the **LOGGER NAME** position. The registration in the logger's memory is stopped after the period, which is equal to **INTEGR. PERIOD** multiplied by **REP. CYCLE**, after pressing the **<START/STOP>** push-button or after stopping the measurements remotely.

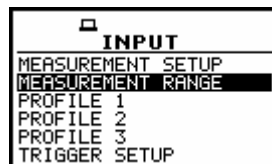
### Measurements started by **<START/STOP>** push-button, ended by last repetition cycle



Relations between **INTEGR. PERIOD** and **LOGGER STEP**

## 5.2 Measurement range setting - MEASUREMENT RANGE

The **MEASUREMENT RANGE** is used to set one of the available measurement ranges in the instrument. In order to open this window the user has to select the **MEASUREMENT RANGE** text in the **INPUT** list by means of the **<<>**, **<>>** push-buttons and press the **<ENTER>** one.



**INPUT** list with the **MEASUREMENT RANGE** selected

There are two ranges available **HIGH** and **LOW**. The detailed description of the measurement ranges parameters is given in App. C. The change of the input range is made by means of the **<<>**, **<>>** push-buttons. After pressing the **<ENTER>** push-button the change is confirmed and the window closes.

The return to the **INPUT** list ignoring any changes made in the sub-list is made after pressing the **<ESC>** push-button.

MEASUR. RANGE	MEASUR. RANGE
RANGE : <b>HIGH</b>	RANGE : <b>LOW</b>
RMS (A)	RMS (A)
36.0dB - 143.6dB	25.0dB - 126.6dB
PEAK	PEAK
72.0dB - 146.6dB	59.0dB - 129.6dB

MEASUREMENT RANGE windows in sound mode; the RANGE selection

MEASUR. RANGE	MEASUR. RANGE
RANGE : <b>HIGH</b>	RANGE : <b>LOW</b>
RMS (HP)	RMS (HP)
10.0mm/s <sup>2</sup> - 708m/s <sup>2</sup>	1.41mm/s <sup>2</sup> - 100m/s <sup>2</sup>
PEAK	PEAK
316mm/s <sup>2</sup> - 1.00km/s <sup>2</sup>	31.6mm/s <sup>2</sup> - 141m/s <sup>2</sup>

MEASUREMENT RANGE windows in vibration mode, the RANGE selection

The range value changes due to the calibration factor (in case of SM changes only upper limit).

BY SENSITIVITY	MEASUR. RANGE	MEASUR. RANGE
SENSITIVITY: 50.00mV/Pa CAL. FACTOR: C= 0.00dB	RANGE : <b>HIGH</b>	RANGE : <b>LOW</b>
	RMS (A)	RMS (A)
	36.0dB - 137.0dB	25.0dB - 120.0dB
	PEAK	PEAK
	72.0dB - 140.0dB	59.0dB - 123.0dB

Displays with change of the default range values in sound mode caused by the calibration factor

BY SENSITIVITY	MEASUR. RANGE	MEASUR. RANGE
SENSITIVITY: 15.00mV/ms <sup>2</sup> CAL. FACTOR: C= -3.52dB	RANGE : <b>HIGH</b>	RANGE : <b>LOW</b>
	RMS (HP)	RMS (HP)
	6.68mm/s <sup>2</sup> - 473m/s <sup>2</sup>	944μm/s <sup>2</sup> - 66.8m/s <sup>2</sup>
	PEAK	PEAK
	211mm/s <sup>2</sup> - 668m/s <sup>2</sup>	21.1mm/s <sup>2</sup> - 94.4m/s <sup>2</sup>

Displays with change of the default range values in vibration mode caused by the calibration factor

### 5.3 Setting parameters in a profile - PROFILE x

The user enters the **PROFILE x** sub-list after pressing the **<ENTER>** push-button on the displayed inversely **PROFILE x** text, which has to be selected by means of the **<<>**, **<>>** push-buttons. In the **PROFILE x** sub-list the following parameters can be programmed independently for each profile: weighting filter (**FILTER**), RMS detector type (**DETECTOR**) and profile's results logged in a file (**LOGGER PEAK**, **LOGGER MAX**, **LOGGER MIN** and **LOGGER RMS** in the case of sound measurements and **LOGGER PEAK**, **LOGGER P-P**, **LOGGER MAX** and **LOGGER RMS** in the case of vibration measurements).

INPUT	INPUT	INPUT
MEASUREMENT SETUP	MEASUREMENT SETUP	MEASUREMENT SETUP
MEASUREMENT RANGE	MEASUREMENT RANGE	MEASUREMENT RANGE
<b>PROFILE 1</b>	<b>PROFILE 1</b>	<b>PROFILE 1</b>
PROFILE 2	PROFILE 2	PROFILE 2
PROFILE 3	PROFILE 3	PROFILE 3
TRIGGER SETUP	TRIGGER SETUP	TRIGGER SETUP

INPUT list with the PROFILE 1, PROFILE 2 and PROFILE 3 selected





**Notice:** The change of the profile parameters is not possible when the measurement is performed. The user has to finish the current measurement.

### 5.3.1 Weighting filter selection in a profile - FILTER

The following weighting filters are available in a profile of the instrument:

- in the case of sound measurements

- **Z** type 1 according to the IEC 61672-1 standard,
- **A** type 1 according to the IEC 651 and IEC 61672-1 standards,
- **C** type 1 according to the IEC 651 and IEC 61672-1 standards,

PROFILE(3)	PROFILE(1)	PROFILE(2)
FILTER : <b>Z</b>	FILTER : <b>A</b>	FILTER : <b>C</b>
DETECTOR: FAST	DETECTOR: FAST	DETECTOR: FAST
LOGGER PEAK : [ ]	LOGGER PEAK : [ ]	LOGGER PEAK : [ ]
LOGGER MAX : [ ]	LOGGER MAX : [ ]	LOGGER MAX : [ ]
LOGGER MIN : [ ]	LOGGER MIN : [ ]	LOGGER MIN : [ ]
LOGGER RMS : [ ]	LOGGER RMS : [ ]	LOGGER RMS : [ ]

PROFILE(x) windows; the selection of the weighting filter in SM

- in the case of acceleration measurements (vibration): **HP1**, **HP3**, **HP10**, **KB**, **Wk**, **Wd**, **Wc**, **Wj**, **Wm**, **Wh**, **Wg** and **Wb**

<b>PROFILE(1)</b> FILTER : <b>HP1</b> DETECTOR: 1.0s LOGGER PEAK : [ ] LOGGER P-P : [ ] LOGGER MAX : [ ] LOGGER RMS : [ ]	<b>PROFILE(1)</b> FILTER : <b>HP3</b> DETECTOR: 1.0s LOGGER PEAK : [ ] LOGGER P-P : [ ] LOGGER MAX : [ ] LOGGER RMS : [ ]	<b>PROFILE(1)</b> FILTER : <b>HP10</b> DETECTOR: 1.0s LOGGER PEAK : [ ] LOGGER P-P : [ ] LOGGER MAX : [ ] LOGGER RMS : [ ]	<b>PROFILE(1)</b> FILTER : <b>KB</b> DETECTOR: 1.0s LOGGER PEAK : [ ] LOGGER P-P : [ ] LOGGER MAX : [ ] LOGGER RMS : [ ]
<b>PROFILE(1)</b> FILTER : <b>Wk</b> DETECTOR: 1.0s LOGGER PEAK : [ ] LOGGER P-P : [ ] LOGGER MAX : [ ] LOGGER RMS : [ ]	<b>PROFILE(1)</b> FILTER : <b>Wd</b> DETECTOR: 1.0s LOGGER PEAK : [ ] LOGGER P-P : [ ] LOGGER MAX : [ ] LOGGER RMS : [ ]	<b>PROFILE(1)</b> FILTER : <b>Wc</b> DETECTOR: 1.0s LOGGER PEAK : [ ] LOGGER P-P : [ ] LOGGER MAX : [ ] LOGGER RMS : [ ]	<b>PROFILE(1)</b> FILTER : <b>Wj</b> DETECTOR: 1.0s LOGGER PEAK : [ ] LOGGER P-P : [ ] LOGGER MAX : [ ] LOGGER RMS : [ ]
<b>PROFILE(1)</b> FILTER : <b>Wm</b> DETECTOR: 1.0s LOGGER PEAK : [ ] LOGGER P-P : [ ] LOGGER MAX : [ ] LOGGER RMS : [ ]	<b>PROFILE(1)</b> FILTER : <b>Wh</b> DETECTOR: 1.0s LOGGER PEAK : [ ] LOGGER P-P : [ ] LOGGER MAX : [ ] LOGGER RMS : [ ]	<b>PROFILE(1)</b> FILTER : <b>Wg</b> DETECTOR: 1.0s LOGGER PEAK : [ ] LOGGER P-P : [ ] LOGGER MAX : [ ] LOGGER RMS : [ ]	<b>PROFILE(1)</b> FILTER : <b>Wb</b> DETECTOR: 1.0s LOGGER PEAK : [ ] LOGGER P-P : [ ] LOGGER MAX : [ ] LOGGER RMS : [ ]

PROFILE(1) windows; the selection of the weighting filter in acceleration measurements

- in the case of velocity measurements (vibration): **Vel1**, **Vel3**, **Vel10** and **VelMF**

<b>PROFILE(1)</b> FILTER : <b>Vel1</b> DETECTOR: 1.0s LOGGER PEAK : [ ] LOGGER P-P : [ ] LOGGER MAX : [ ] LOGGER RMS : [ ]	<b>PROFILE(1)</b> FILTER : <b>Vel3</b> DETECTOR: 1.0s LOGGER PEAK : [ ] LOGGER P-P : [ ] LOGGER MAX : [ ] LOGGER RMS : [ ]	<b>PROFILE(1)</b> FILTER : <b>Vel10</b> DETECTOR: 1.0s LOGGER PEAK : [ ] LOGGER P-P : [ ] LOGGER MAX : [ ] LOGGER RMS : [ ]	<b>PROFILE(1)</b> FILTER : <b>VelMF</b> DETECTOR: 1.0s LOGGER PEAK : [ ] LOGGER P-P : [ ] LOGGER MAX : [ ] LOGGER RMS : [ ]
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PROFILE(1) windows; the selection of the weighting filter in velocity measurements

- in the case of displacement measurements (vibration): **Dil1**, **Dil3** and **Dil10**

PROFILE(1)	PROFILE(1)	PROFILE(1)
FILTER : <b>D111</b>	FILTER : <b>D113</b>	FILTER : <b>D1110</b>
DETECTOR: 1.0s	DETECTOR: 1.0s	DETECTOR: 1.0s
LOGGER PEAK : [ ]	LOGGER PEAK : [ ]	LOGGER PEAK : [ ]
LOGGER P-P : [ ]	LOGGER P-P : [ ]	LOGGER P-P : [ ]
LOGGER MAX : [ ]	LOGGER MAX : [ ]	LOGGER MAX : [ ]
LOGGER RMS : [ ]	LOGGER RMS : [ ]	LOGGER RMS : [ ]

PROFILE(1) windows; the selection of the weighting filter in displacement measurements

The characteristics of the filters are given in App. D. The selection of the required filter is made with the <◀>, <▶> push-buttons. The user can enter the **FILTER** line in the **PROFILE x** sub-list pressing the <▲>, <▼> push-buttons. After pressing the <ENTER> push-button any changes made in the sub-list are confirmed and it is closed. The return to the **INPUT** list ignoring any changes made in the sub-list is made after pressing the <ESC> push-button.

### 5.3.2 RMS detector selection - DETECTOR

In the instrument the following RMS detectors are available: **IMPULSE**, **FAST** and **SLOW** (in the case of sound measurements) and **100ms**, **125ms**, **200ms**, **500ms**, **1.0s**, **2.0s**, **5.0s**, **10.0s** (in the case of vibration measurements). The selection of the required detector is made with the <◀>, <▶> push-buttons. The user can enter the **DETECTOR** line in the **PROFILE x** sub-list pressing the <▲>, <▼> push-buttons. After pressing the <ENTER> push-button any changes made in the sub-list are confirmed and it is closed. The return to the **INPUT** list ignoring any changes made in the sub-list is made after pressing the <ESC> push-button.

PROFILE(3)	PROFILE(2)	PROFILE(1)
FILTER : 2	FILTER : C	FILTER : A
DETECTOR: <b>IMP.</b>	DETECTOR: <b>FAST</b>	DETECTOR: <b>SLOW</b>
LOGGER PEAK : [ ]	LOGGER PEAK : [ ]	LOGGER PEAK : [ ]
LOGGER MAX : [ ]	LOGGER MAX : [ ]	LOGGER MAX : [ ]
LOGGER MIN : [ ]	LOGGER MIN : [ ]	LOGGER MIN : [ ]
LOGGER RMS : [ ]	LOGGER RMS : [ ]	LOGGER RMS : [ ]

PROFILE(x) windows (SM); the selection of the RMS detector

PROFILE(1)	PROFILE(1)	PROFILE(1)	PROFILE(1)
FILTER : HP1	FILTER : HP1	FILTER : HP1	FILTER : HP1
DETECTOR: <b>100ms</b>	DETECTOR: <b>125ms</b>	DETECTOR: <b>200ms</b>	DETECTOR: <b>500ms</b>
LOGGER PEAK : [ ]	LOGGER PEAK : [ ]	LOGGER PEAK : [ ]	LOGGER PEAK : [ ]
LOGGER P-P : [ ]	LOGGER P-P : [ ]	LOGGER P-P : [ ]	LOGGER P-P : [ ]
LOGGER MAX : [ ]	LOGGER MAX : [ ]	LOGGER MAX : [ ]	LOGGER MAX : [ ]
LOGGER RMS : [ ]	LOGGER RMS : [ ]	LOGGER RMS : [ ]	LOGGER RMS : [ ]

PROFILE(1)	PROFILE(1)	PROFILE(1)	PROFILE(1)
FILTER : HP1	FILTER : HP1	FILTER : HP1	FILTER : HP1
DETECTOR: <b>1.0s</b>	DETECTOR: <b>2.0s</b>	DETECTOR: <b>5.0s</b>	DETECTOR: <b>10.0s</b>
LOGGER PEAK : [ ]	LOGGER PEAK : [ ]	LOGGER PEAK : [ ]	LOGGER PEAK : [ ]
LOGGER P-P : [ ]	LOGGER P-P : [ ]	LOGGER P-P : [ ]	LOGGER P-P : [ ]
LOGGER MAX : [ ]	LOGGER MAX : [ ]	LOGGER MAX : [ ]	LOGGER MAX : [ ]
LOGGER RMS : [ ]	LOGGER RMS : [ ]	LOGGER RMS : [ ]	LOGGER RMS : [ ]

PROFILE(1) windows (vibration mode); the selection of the RMS detector

### 5.3.3 PEAK result selection for saving in a logger's file - LOGGER PEAK

Up to four measurement results from each profile can be saved in the logger's file of the instrument. In order to save the **PEAK** result (cf. the definition in App. D) the user has to activate this line (by means of the <▲>, <▼> push-buttons) and place a special character in the brackets using the <◀>, <▶> push-buttons. After pressing the <ENTER> push-button any changes made in the window are confirmed and it is closed. The return to the **INPUT** list ignoring any changes made in the window is made after pressing the <ESC> push-button.

PROFILE(1)	PROFILE(1)	PROFILE(2)	PROFILE(2)
FILTER : A DETECTOR: FAST LOGGER PEAK : [ ] LOGGER MAX : [ ] LOGGER MIN : [ ] LOGGER RMS : [ ]	FILTER : A DETECTOR: FAST LOGGER PEAK : [✓] LOGGER MAX : [ ] LOGGER MIN : [ ] LOGGER RMS : [ ]	FILTER : C DETECTOR: FAST LOGGER PEAK : [ ] LOGGER MAX : [ ] LOGGER MIN : [ ] LOGGER RMS : [ ]	FILTER : C DETECTOR: FAST LOGGER PEAK : [✓] LOGGER MAX : [ ] LOGGER MIN : [ ] LOGGER RMS : [ ]

...

PROFILE(3)	PROFILE(3)
FILTER : Z DETECTOR: FAST LOGGER PEAK : [ ] LOGGER MAX : [ ] LOGGER MIN : [ ] LOGGER RMS : [ ]	FILTER : Z DETECTOR: FAST LOGGER PEAK : [✓] LOGGER MAX : [ ] LOGGER MIN : [ ] LOGGER RMS : [ ]

PROFILE(x) windows (sound mode); the PEAK result to be not saved or saved in a logger's file

PROFILE(1)	PROFILE(1)	PROFILE(2)	PROFILE(2)
FILTER : HP1 DETECTOR: 1.0s LOGGER PEAK : [ ] LOGGER P-P : [ ] LOGGER MAX : [ ] LOGGER RMS : [ ]	FILTER : HP1 DETECTOR: 1.0s LOGGER PEAK : [✓] LOGGER P-P : [ ] LOGGER MAX : [ ] LOGGER RMS : [ ]	FILTER : HP3 DETECTOR: 1.0s LOGGER PEAK : [ ] LOGGER P-P : [ ] LOGGER MAX : [ ] LOGGER RMS : [ ]	FILTER : HP3 DETECTOR: 1.0s LOGGER PEAK : [✓] LOGGER P-P : [ ] LOGGER MAX : [ ] LOGGER RMS : [ ]

...

PROFILE(3)	PROFILE(3)
FILTER : HP10 DETECTOR: 1.0s LOGGER PEAK : [ ] LOGGER P-P : [ ] LOGGER MAX : [ ] LOGGER RMS : [ ]	FILTER : HP10 DETECTOR: 1.0s LOGGER PEAK : [✓] LOGGER P-P : [ ] LOGGER MAX : [ ] LOGGER RMS : [ ]

...

PROFILE(x) windows (vibration); the PEAK result to be not saved or saved in a logger's file

### 5.3.4 MAX result selection for saving in a logger's file - LOGGER MAX

In order to save the **MAX** result (cf. the definition in App. D) the user has to activate this line (by means of the <▲>, <▼> push-buttons) and place a special character in the brackets using the <◀>, <▶> push-buttons. After pressing the <ENTER> push-button any changes made in the window are confirmed and it is closed. The return to the **INPUT** list ignoring any changes made in the window is made after pressing the <ESC> push-button.

PROFILE(1)	PROFILE(1)	PROFILE(3)	PROFILE(3)
FILTER : A DETECTOR: FAST LOGGER PEAK : [✓] LOGGER MAX : [ ] LOGGER MIN : [ ] LOGGER RMS : [ ]	FILTER : A DETECTOR: FAST LOGGER PEAK : [✓] LOGGER MAX : [✓] LOGGER MIN : [ ] LOGGER RMS : [ ]	FILTER : Z DETECTOR: FAST LOGGER PEAK : [ ] LOGGER MAX : [ ] LOGGER MIN : [ ] LOGGER RMS : [ ]	FILTER : Z DETECTOR: FAST LOGGER PEAK : [ ] LOGGER MAX : [✓] LOGGER MIN : [ ] LOGGER RMS : [ ]

...

PROFILE(x) windows (SM); the MAX result to be not saved or saved in a logger's file

PROFILE(1)	PROFILE(1)	PROFILE(2)	PROFILE(2)
FILTER : HP1 DETECTOR: 1.0s LOGGER PEAK : [ ] LOGGER P-P : [ ] LOGGER MAX : [ ] LOGGER RMS : [ ]	FILTER : HP1 DETECTOR: 1.0s LOGGER PEAK : [ ] LOGGER P-P : [ ] LOGGER MAX : [✓] LOGGER RMS : [ ]	FILTER : HP3 DETECTOR: 1.0s LOGGER PEAK : [ ] LOGGER P-P : [ ] LOGGER MAX : [ ] LOGGER RMS : [ ]	FILTER : HP3 DETECTOR: 1.0s LOGGER PEAK : [ ] LOGGER P-P : [ ] LOGGER MAX : [✓] LOGGER RMS : [ ]

...

PROFILE(3)	PROFILE(3)
FILTER : HP10 DETECTOR: 1.0s LOGGER PEAK : [ ] LOGGER P-P : [ ] LOGGER MAX : [ ] LOGGER RMS : [ ]	FILTER : HP10 DETECTOR: 1.0s LOGGER PEAK : [ ] LOGGER P-P : [ ] LOGGER MAX : [✓] LOGGER RMS : [ ]

PROFILE(x) windows (VM); the MAX result to be not saved or saved in a logger's file

### 5.3.5 P-P result selection for saving in a logger's file - LOGGER P-P

In order to save the **P-P** result (cf. the definition in App. D) the user has to activate this line (by means of the **<▲>**, **<▼>** push-buttons) and place a special character in the brackets using the **<◀>**, **<▶>** push-buttons. After pressing the **<ENTER>** push-button any changes made in the window are confirmed and it is closed. The return to the **INPUT** list ignoring any changes made in the window is made after pressing the **<ESC>** push-button. The **LOGGER P-P** position is available only in **VM**.

PROFILE(1)	PROFILE(1)	PROFILE(3)	PROFILE(3)
FILTER : HP1 DETECTOR: 1.0s LOGGER PEAK : [✓] LOGGER P-P : [◀▶] LOGGER MAX : [ ] LOGGER RMS : [ ]	FILTER : HP1 DETECTOR: 1.0s LOGGER PEAK : [✓] LOGGER P-P : [◀▶] LOGGER MAX : [ ] LOGGER RMS : [ ]	FILTER : HP10 DETECTOR: 1.0s LOGGER PEAK : [ ] LOGGER P-P : [◀▶] LOGGER MAX : [ ] LOGGER RMS : [ ]	FILTER : HP10 DETECTOR: 1.0s LOGGER PEAK : [ ] LOGGER P-P : [◀▶] LOGGER MAX : [ ] LOGGER RMS : [ ]

PROFILE(x) windows; the P-P result to be not saved or saved in a logger's file

### 5.3.6 MIN result selection for saving in a logger's file - LOGGER MIN

In order to save the **MIN** result (cf. the definition in App. D) the user has to activate this line (by means of the **<▲>**, **<▼>** push-buttons) and place a special character in the brackets using the **<◀>**, **<▶>** push-buttons. After pressing the **<ENTER>** push-button any changes made in the window are confirmed and it is closed. The return to the **INPUT** list ignoring any changes made in the window is made after pressing the **<ESC>** push-button. The **LOGGER MIN** position is available only in **SM**.

PROFILE(1)	PROFILE(1)	PROFILE(3)	PROFILE(3)
FILTER : A DETECTOR: FAST LOGGER PEAK : [✓] LOGGER MAX : [✓] LOGGER MIN : [◀▶] LOGGER RMS : [ ]	FILTER : A DETECTOR: FAST LOGGER PEAK : [✓] LOGGER MAX : [✓] LOGGER MIN : [◀▶] LOGGER RMS : [ ]	FILTER : Z DETECTOR: FAST LOGGER PEAK : [ ] LOGGER MAX : [ ] LOGGER MIN : [◀▶] LOGGER RMS : [ ]	FILTER : Z DETECTOR: FAST LOGGER PEAK : [ ] LOGGER MAX : [ ] LOGGER MIN : [◀▶] LOGGER RMS : [ ]

PROFILE(x) windows; the MIN result to be not saved or saved in a logger's file

### 5.3.7 RMS result selection for saving in a logger's file - LOGGER RMS

In order to save the **RMS** result (cf. the definition in App. D) the user has to activate this line (by means of the **<▲>**, **<▼>** push-buttons) and place a special character in the brackets using the **<◀>**, **<▶>** push-buttons. After pressing the **<ENTER>** push-button any changes made in the window are confirmed and it is closed. The return to the **INPUT** list ignoring any changes made in the window is made after pressing the **<ESC>** push-button.

PROFILE(1)	PROFILE(1)	PROFILE(3)	PROFILE(3)
FILTER : A DETECTOR: FAST LOGGER PEAK : [✓] LOGGER MAX : [✓] LOGGER MIN : [ ] LOGGER RMS : [◀▶]	FILTER : A DETECTOR: FAST LOGGER PEAK : [✓] LOGGER MAX : [✓] LOGGER MIN : [ ] LOGGER RMS : [◀▶]	FILTER : Z DETECTOR: FAST LOGGER PEAK : [ ] LOGGER MAX : [ ] LOGGER MIN : [ ] LOGGER RMS : [◀▶]	FILTER : Z DETECTOR: FAST LOGGER PEAK : [ ] LOGGER MAX : [ ] LOGGER MIN : [ ] LOGGER RMS : [◀▶]

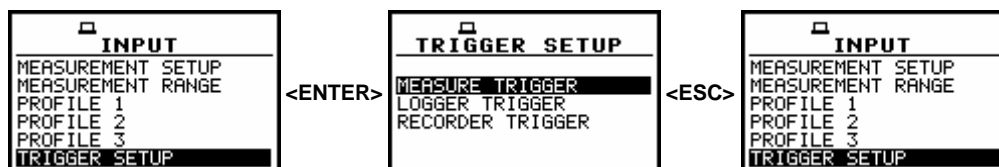
PROFILE(x) window (SM); the RMS result to be not saved or saved in a logger's file

PROFILE(1)	PROFILE(1)	PROFILE(3)	PROFILE(3)
FILTER : Wd DETECTOR: 1.0s LOGGER PEAK : [✓] LOGGER P-P : [✓] LOGGER MAX : [✓] LOGGER RMS : [◀▶]	FILTER : Wd DETECTOR: 1.0s LOGGER PEAK : [✓] LOGGER P-P : [✓] LOGGER MAX : [✓] LOGGER RMS : [◀▶]	FILTER : Wm DETECTOR: 1.0s LOGGER PEAK : [✓] LOGGER P-P : [ ] LOGGER MAX : [ ] LOGGER RMS : [◀▶]	FILTER : Wm DETECTOR: 1.0s LOGGER PEAK : [✓] LOGGER P-P : [ ] LOGGER MAX : [ ] LOGGER RMS : [◀▶]

PROFILE(x) windows (VM); the RMS result to be not saved or saved in a logger's file

## 5.4 Triggering mode and parameters selection - TRIGGER SETUP

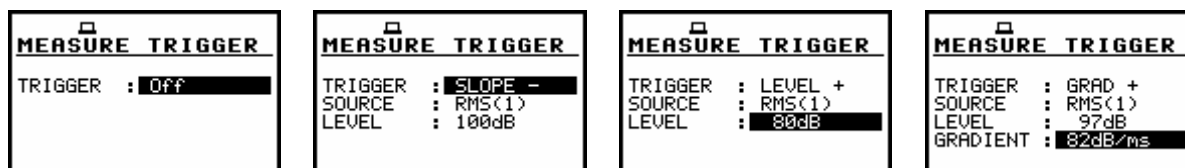
The **TRIGGER SETUP** sub-list enables the user to set the triggering parameters. It is not present for the **DOSE METER** function. This sub-list is opened after the selection of the **TRIGGER SETUP** text from the **INPUT** list by means of the <V>, <E> (or <V>, <E> with <SHIFT>) push-buttons and pressing the <ENTER> one. The **TRIGGER SETUP** consists of the **MEASURE TRIGGER**, **LOGGER TRIGGER** and **RECORDER TRIGGER** sub-lists. The return to the **INPUT** list is made after pressing the <ESC> push-button.



TRIGGER SETUP selected in the INPUT list and the TRIGGER SETUP window

### 5.4.1 Trigger parameters setting - MEASURE TRIGGER

The **MEASURE TRIGGER** is a contexts sub-list in which the triggering can be switched off or on (**TRIGGER**), in the case when on - the source of the triggering signal can be determined (**SOURCE**), its level (**LEVEL**) and sometimes also the speed of changes (**GRADIENT**). In order to enter this sub-list the user has to select by means of the <A>, <E> push-buttons the **MEASURE TRIGGER** text in the **TRIGGER SETUP** sub-list and press the <ENTER> one.

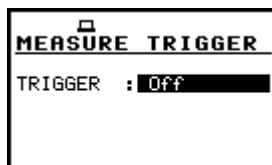


MEASURE TRIGGER windows

In order to change the displayed inversely parameter the user has to press the <A>, <V> push-buttons. The confirmation of any change made in the window requires pressing the <ENTER> push-button, which simultaneously closes the current display. The **MEASURE TRIGGER** window is closed ignoring any changes made, after pressing any time the <ESC> push-button.

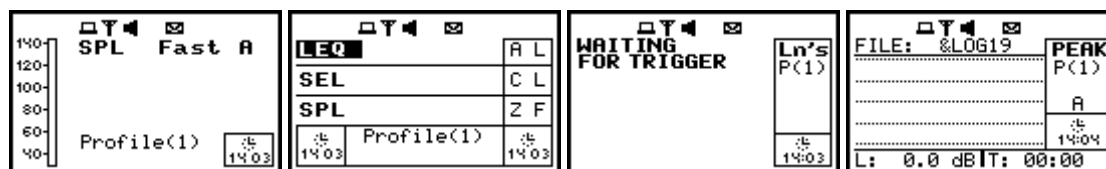
#### 5.4.1.1 Switching the triggering on and off - TRIGGER

The triggering of the measurements (**TRIGGER**) can be switched off using the <E> push-button.



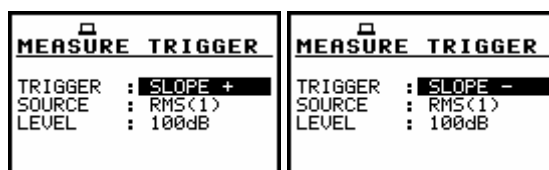
MEASURE TRIGGER window; TRIGGER switched off

The triggering is switched on if one of its five modes is selected: **SLOPE +**, **SLOPE -**, **LEVEL +**, **LEVEL -** or **GRAD +**. The selection of the triggering mode is performed using the <E>, <V> push-buttons. If the instrument works with the triggering switched on, the “Antenna” icon is flashing on the display in the case when the triggering condition was not fulfilled.



Displays during the measurements while the triggering condition is not fulfilled

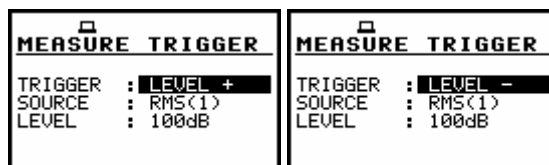
In the case when the **SLOPE +** is selected, the measurement starts when the arising signal will pass the level determined in the **LEVEL**. In the case when the **SLOPE -** is selected, the measurement starts when the falling down signal will pass the level determined in the **LEVEL**. The measurement is stopped when the conditions set in the **MEASUREMENT SETUP** sub-list are fulfilled, after pressing the **<START / STOP>** push-button or after receiving the proper control code remotely.



MEASURE TRIGGER windows with the SLOPE modes selected

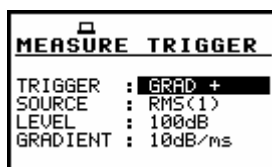
In the case when the **LEVEL +** is selected, in each second of the measurement the triggering condition is checked; the measurement is registered only when the signal has the greater level than this determined in the **LEVEL** and in the other case the measurement result is skipped.

In the case when the **LEVEL -** is selected, in each second of the measurement the triggering condition is checked; the measurement is registered only when the signal has the lower level than this determined in the **LEVEL** and in the other case the measurement result is skipped.



MEASURE TRIGGER windows with the LEVEL modes selected

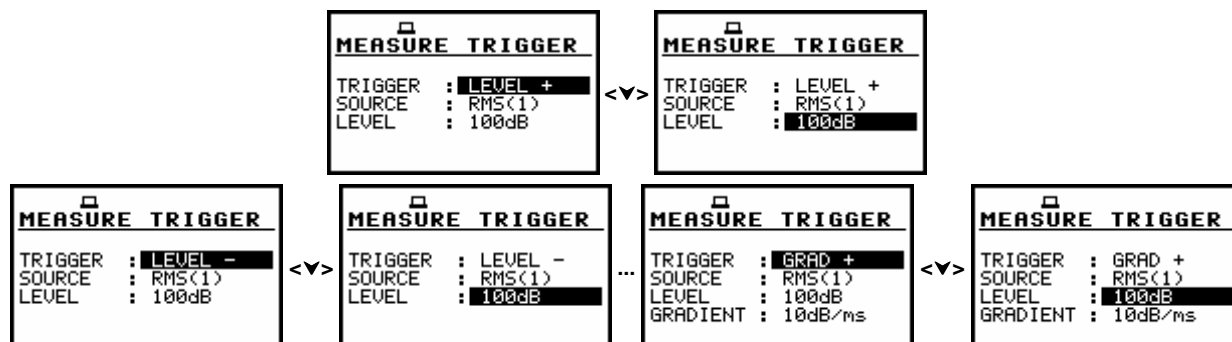
In the case when the **GRAD +** is selected, in each second of the measurement the triggering condition is checked; the measurement is registered only when the signal has the greater level than this determined in the **LEVEL** and the speed of the signal changes is not less than that selected in the **GRADIENT**. In the other case the measurement result is skipped.



MEASURE TRIGGER window with the GRAD + mode selected

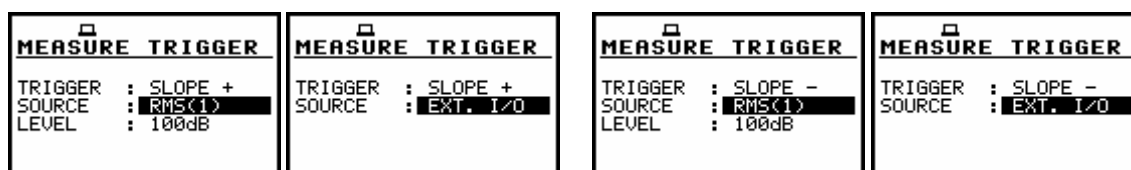
#### 5.4.1.2 Selection of the triggering signal - SOURCE

It is assumed that only one measured result can be used as a source of the triggering signal in the **LEVEL METER** mode, namely the output signal from the RMS detector coming from the first profile which is denoted here as **RMS(1)**. This position does not become active (it is not displayed inversely) and the text stated here remains unchanged in the case of **LEVEL +**, **LEVEL -** or **GRAD +** triggering mode. After pressing there the **<▼>** push-button, the **SOURCE** line is skipped.



MEASURE TRIGGER windows with not active SOURCE signal line

In the case of **SLOPE +** and **SLOPE -** as a source of the triggering signal can be used the signal connected to the external input/output socked named **I/O**. The selection of the source of the triggering signal is performed using the **<<>**, **<>>** push-buttons.



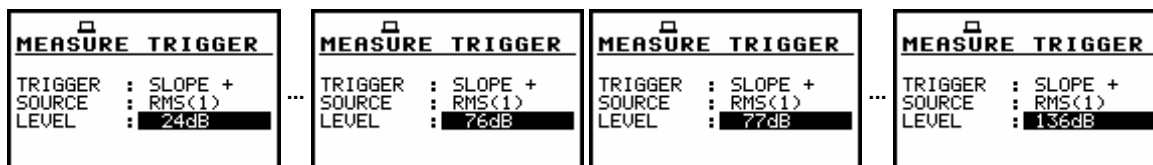
MEASURE TRIGGER windows with the SOURCE signal selection



**Notice:** Only one signal measured in the instrument - the RMS detector in the first profile - can be used as the triggering signal. Additionally, the signal from **Ext.I/O** can be also used as the trigger source in the **SLOPE +** and **SLOPE -** modes.

#### 5.4.1.3 Setting the level of the triggering signal - LEVEL

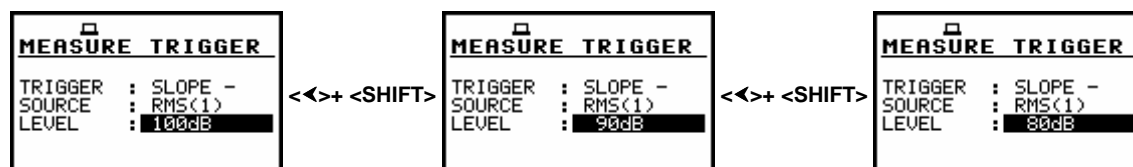
The level of the triggering signal (**LEVEL**) can be set in 1 dB step (or 10 dB steps) from 24 dB to 136 dB range using the **<<>**, **<>>** push-buttons (or **<<>**, **<>>** with **<SHIFT>**).



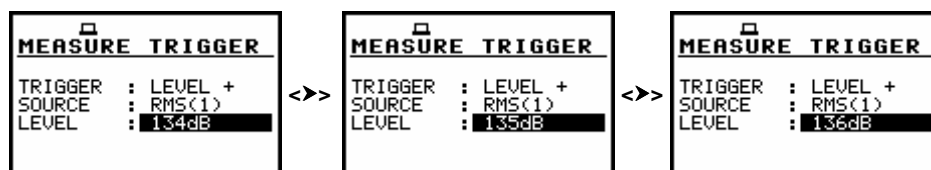
MEASURE TRIGGER windows with the LEVEL selection in the SLOPE + mode



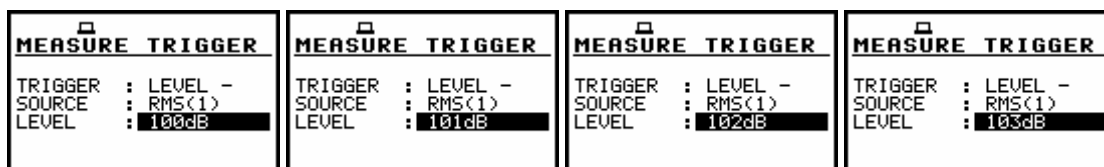
**Notice:** The **LEVEL** value of the triggering signal refers to the instantaneous value of the RMS result from the first profile calculated during the period depending on selected **DETECTOR** (path: MENU / INPUT / PROFILE 1 / DETECTOR).



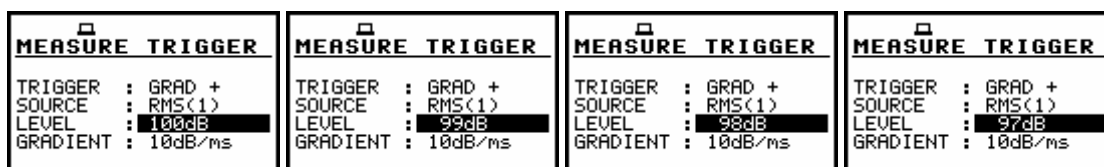
MEASURE TRIGGER windows with the LEVEL selection in the SLOPE - mode (10 dB step down)



MEASURE TRIGGER windows with the LEVEL selection in the LEVEL + mode (1 dB step up)



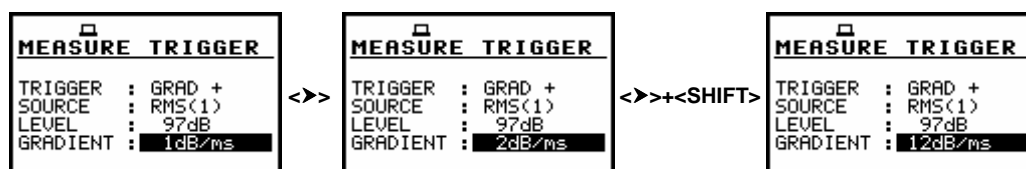
MEASURE TRIGGER windows with the LEVEL selection in the LEVEL - mode (1 dB step up)



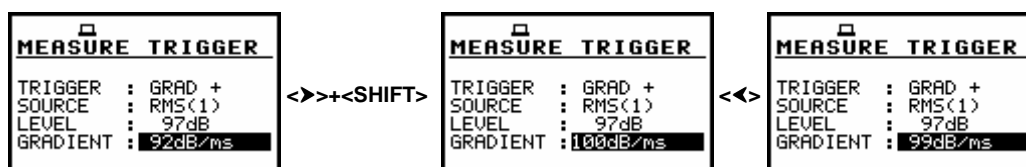
MEASURE TRIGGER windows with the LEVEL selection in the GRAD + mode (1 dB step down)

#### 5.4.1.4 Setting the speed of the triggering signal changes - GRADIENT

The speed of the triggering signal changes (**GRADIENT**) can be set in 1 dB/millisecond step (or 10 dB/millisecond steps) from 1 dB/ms to 100 dB/ms range using the <<>, <>> push-buttons (or <<>, <>> with <SHIFT>).



MEASURE TRIGGER windows with the GRADIENT selection (1 dB/ms and 10 dB/ms step up)



MEASURE TRIGGER windows with the GRADIENT selection (10 dB/ms up and 1 dB/ms down)

#### 5.4.2 Trigger parameters in logger setting - LOGGER TRIGGER

The **LOGGER TRIGGER** parameters influence the way the measurement results are saved in the logger. It is a contexts sub-list in which the triggering in logger can be switched off or on (**TRIGGER**), in the case when on (**LEVEL +**) - the source of the triggering signal is determined (**SOURCE**), its level can be selected (**LEVEL**), the number of the results saved in the logger before the fulfilment of the triggering condition (**PRE**) and the number of the results saved in the logger after



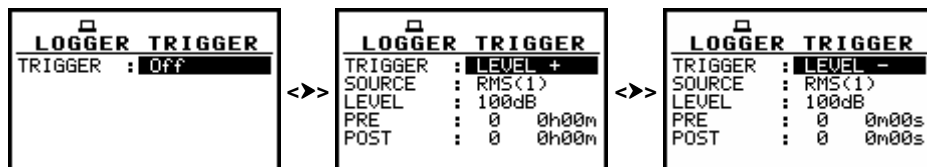
the fulfilment of the triggering condition (**POST**). If the triggering signal is greater than the selected in the **LEVEL**, the logger contains:

- the measurement results registered directly before the fulfilment of the triggering condition; time of the registration can be calculated by multiplying the value set in the **PRE** by the time period taken from the **LOGGER STEP** (*path: MENU / INPUT / MEASUREMENT SETUP / LOGGER STEP*);
- all measurement results up to the moment the triggering signal falls down the **LEVEL**;
- the results registered directly after the fulfilment of the triggering condition; time of the registration can be calculated by multiplying the value set in the **POST** by the time period taken from the **LOGGER STEP** (*path: MENU / INPUT / MEASUREMENT SETUP / LOGGER STEP*).

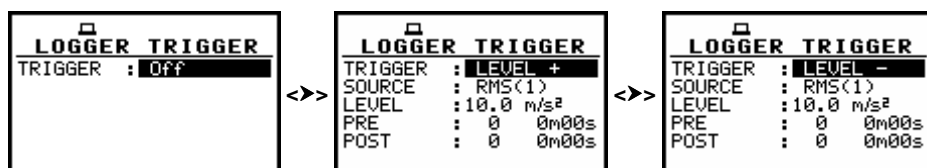
In order to change the displayed inversely parameter the user has to press the **<▲>**, **<▼>** push-buttons. The confirmation of any change made in the window requires pressing the **<ENTER>** push-button, which simultaneously closes the current display. The **LOGGER TRIGGER** window is closed ignoring any changes made, after pressing any time the **<ESC>** push-button.

#### 5.4.2.1 Switching the logger triggering on and off - TRIGGER

The logger triggering of the measurements (**TRIGGER**) can be switched off using the **<◀>** push-button (or **<◀>** with **<SHIFT>**). The triggering is switched on if the **LEVEL +** or **LEVEL -** mode is selected using the **<▶>** push-button (or **<▶>** with **<SHIFT>**).



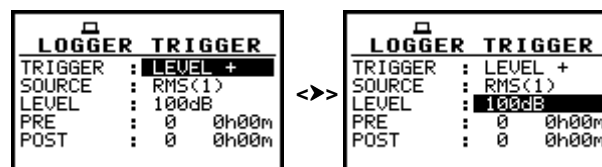
LOGGER SETUP windows in sound mode



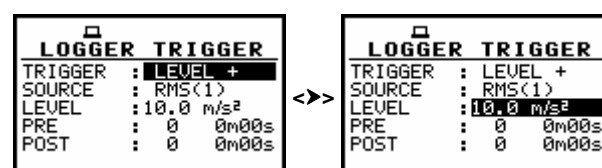
LOGGER SETUP windows in vibration mode

#### 5.4.2.2 Selection of the triggering signal in logger - SOURCE

It is assumed that only one measured result can be used as a source of the triggering signal in the logger, namely the output signal from the RMS detector coming from the first profile which is denoted here as **RMS(1)**. This position does not become active (it is not displayed inversely) and the text stated here remains unchanged. After pressing the **<▼>** push-button, the **SOURCE** line is skipped.



LOGGER TRIGGER windows with the not active SOURCE signal line in sound mode



## LOGGER TRIGGER windows with the not active SOURCE signal line in vibration mode

### 5.4.2.3 Setting the level of the triggering signal in the logger - LEVEL

The level of the triggering signal in logger (**LEVEL**) can be set in sound mode in 1 dB step (or 10 dB steps) from 24 dB to 136 dB range using the <<>, <>> push-buttons (or <<><sub>2</sub><>> with <SHIFT>). In vibration mode the step is equal to 1 dB (or 10 dB) from 1.00 mm/s<sup>2</sup> to 10.0 km/s<sup>2</sup>.

<b>LOGGER TRIGGER</b> TRIGGER : LEVEL + SOURCE : RMS<1> LEVEL : 24dB PRE : 0 0h00m POST : 0 0h00m	<b>LOGGER TRIGGER</b> TRIGGER : LEVEL + SOURCE : RMS<1> LEVEL : 25dB PRE : 0 0h00m POST : 0 0h00m	<b>LOGGER TRIGGER</b> TRIGGER : LEVEL + SOURCE : RMS<1> LEVEL : 26dB PRE : 0 0h00m POST : 0 0h00m	<b>LOGGER TRIGGER</b> TRIGGER : LEVEL + SOURCE : RMS<1> LEVEL : 27dB PRE : 0 0h00m POST : 0 0h00m
<b>LOGGER TRIGGER</b> TRIGGER : LEVEL - SOURCE : RMS<1> LEVEL : 70dB PRE : 0 0m00s POST : 0 0m00s	<b>LOGGER TRIGGER</b> TRIGGER : LEVEL - SOURCE : RMS<1> LEVEL : 71dB PRE : 0 0m00s POST : 0 0m00s	<b>LOGGER TRIGGER</b> TRIGGER : LEVEL - SOURCE : RMS<1> LEVEL : 72dB PRE : 0 0m00s POST : 0 0m00s	<b>LOGGER TRIGGER</b> TRIGGER : LEVEL - SOURCE : RMS<1> LEVEL : 73dB PRE : 0 0m00s POST : 0 0m00s

LOGGER TRIGGER windows with the LEVEL selection (1 dB step up) in sound mode

<b>LOGGER TRIGGER</b> TRIGGER : LEVEL + SOURCE : RMS<1> LEVEL : 10.0 m/s <sup>2</sup> PRE : 0 0m00s POST : 0 0m00s	<b>LOGGER TRIGGER</b> TRIGGER : LEVEL + SOURCE : RMS<1> LEVEL : 11.2 m/s <sup>2</sup> PRE : 0 0m00s POST : 0 0m00s	<b>LOGGER TRIGGER</b> TRIGGER : LEVEL + SOURCE : RMS<1> LEVEL : 12.6 m/s <sup>2</sup> PRE : 0 0m00s POST : 0 0m00s	<b>LOGGER TRIGGER</b> TRIGGER : LEVEL + SOURCE : RMS<1> LEVEL : 14.1 m/s <sup>2</sup> PRE : 0 0m00s POST : 0 0m00s
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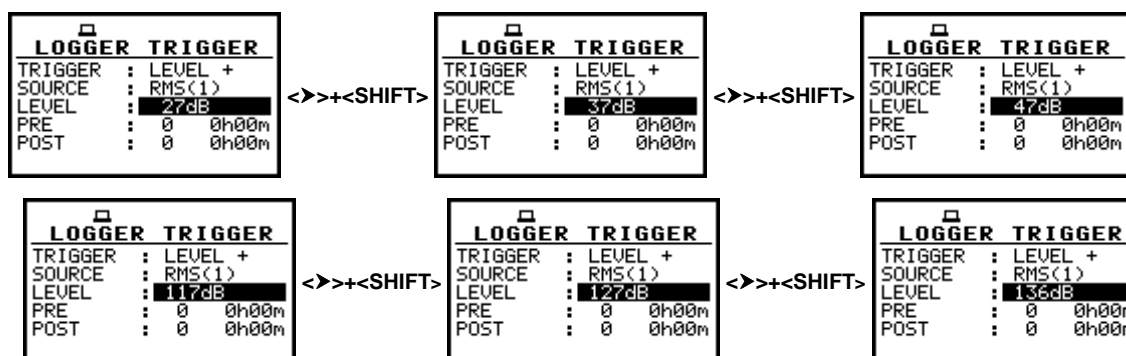
LOGGER TRIGGER windows with the LEVEL selection (1 dB step up) in vibration mode

<b>LOGGER TRIGGER</b> TRIGGER : LEVEL + SOURCE : RMS<1> LEVEL : 20.0 m/s <sup>2</sup> PRE : 0 0m00s POST : 0 0m00s	<b>LOGGER TRIGGER</b> TRIGGER : LEVEL + SOURCE : RMS<1> LEVEL : 22.4 m/s <sup>2</sup> PRE : 0 0m00s POST : 0 0m00s	<b>LOGGER TRIGGER</b> TRIGGER : LEVEL + SOURCE : RMS<1> LEVEL : 25.1 m/s <sup>2</sup> PRE : 0 0m00s POST : 0 0m00s	<b>LOGGER TRIGGER</b> TRIGGER : LEVEL + SOURCE : RMS<1> LEVEL : 28.2 m/s <sup>2</sup> PRE : 0 0m00s POST : 0 0m00s
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LOGGER TRIGGER windows with the LEVEL selection in vibration mode (1 dB step up, cont.)



**Notice:** The **LEVEL** value of the triggering signal in logger refers to the instantaneous value of the RMS result from the first profile calculated during the period depending on selected **DETECTOR** (path: MENU / INPUT / PROFILE 1 / DETECTOR).



<b>LOGGER TRIGGER</b> TRIGGER : LEVEL - SOURCE : RMS<1> LEVEL : 54dB PRE : 0 0m00s POST : 0 0m00s	<>>+<SHIFT>	<b>LOGGER TRIGGER</b> TRIGGER : LEVEL - SOURCE : RMS<1> LEVEL : 64dB PRE : 0 0m00s POST : 0 0m00s	<>>+<SHIFT>	<b>LOGGER TRIGGER</b> TRIGGER : LEVEL - SOURCE : RMS<1> LEVEL : 74dB PRE : 0 0m00s POST : 0 0m00s
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LOGGER TRIGGER windows with the LEVEL selection (10 dB step up) in sound mode

<b>LOGGER TRIGGER</b> TRIGGER : LEVEL + SOURCE : RMS<1> LEVEL : 1.00 m/s <sup>2</sup> PRE : 0 0m00s POST : 0 0m00s	<>>+<SHIFT>	<b>LOGGER TRIGGER</b> TRIGGER : LEVEL + SOURCE : RMS<1> LEVEL : 8.16 m/s <sup>2</sup> PRE : 0 0m00s POST : 0 0m00s	<>>+<SHIFT>	<b>LOGGER TRIGGER</b> TRIGGER : LEVEL + SOURCE : RMS<1> LEVEL : 10.0 m/s <sup>2</sup> PRE : 0 0m00s POST : 0 0m00s
<b>LOGGER TRIGGER</b> TRIGGER : LEVEL + SOURCE : RMS<1> LEVEL : 31.6 m/s <sup>2</sup> PRE : 0 0m00s POST : 0 0m00s	<>>+<SHIFT>	<b>LOGGER TRIGGER</b> TRIGGER : LEVEL + SOURCE : RMS<1> LEVEL : 100 m/s <sup>2</sup> PRE : 0 0m00s POST : 0 0m00s	<>>+<SHIFT>	<b>LOGGER TRIGGER</b> TRIGGER : LEVEL + SOURCE : RMS<1> LEVEL : 316mm/s <sup>2</sup> PRE : 0 0m00s POST : 0 0m00s
<b>LOGGER TRIGGER</b> TRIGGER : LEVEL + SOURCE : RMS<1> LEVEL : 1.00km/s <sup>2</sup> PRE : 0 0m00s POST : 0 0m00s	<>>+<SHIFT>	<b>LOGGER TRIGGER</b> TRIGGER : LEVEL + SOURCE : RMS<1> LEVEL : 3.16km/s <sup>2</sup> PRE : 0 0m00s POST : 0 0m00s	<>>+<SHIFT>	<b>LOGGER TRIGGER</b> TRIGGER : LEVEL + SOURCE : RMS<1> LEVEL : 10.0km/s <sup>2</sup> PRE : 0 0m00s POST : 0 0m00s

LOGGER TRIGGER windows with the LEVEL selection (10 dB step up) in vibration mode

#### 5.4.2.4 Selection of the number of the results to be saved in the logger before the fulfilment of the triggering condition - PRE

In the **PRE** line the number of the results registered in the logger's file before the fulfilment of the triggering condition can be set. This number is within the limits 0..50 and can be set with the step equal to one using the <<>, <>> push-buttons or with the step equal to 10 using the <<>, <>> with <SHIFT>.

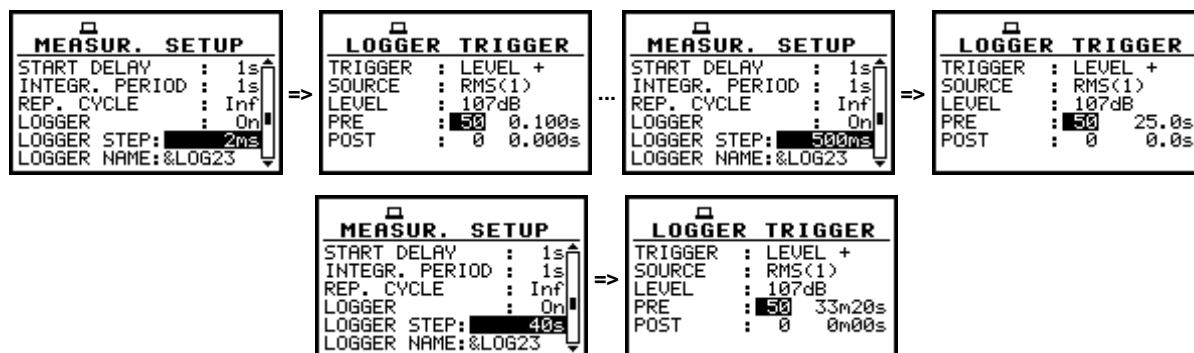
<b>MEASUR. SETUP</b> START DELAY : 1s INTEGR. PERIOD : 1s REP. CYCLE : Inf LOGGER : On LOGGER STEP: 100ms LOGGER NAME: &LOG23	=>	<b>LOGGER TRIGGER</b> TRIGGER : LEVEL + SOURCE : RMS<1> LEVEL : 107dB PRE : 0 0.0s POST : 0 0.0s	<>>	<b>LOGGER TRIGGER</b> TRIGGER : LEVEL + SOURCE : RMS<1> LEVEL : 107dB PRE : 2 0.2s POST : 0 0.0s	...	<b>LOGGER TRIGGER</b> TRIGGER : LEVEL + SOURCE : RMS<1> LEVEL : 107dB PRE : 50 5.0s POST : 0 0.0s
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LOGGER TRIGGER windows with the PRE selection in sound mode

<b>MEASUR. SETUP</b> START DELAY : 1s INTEGR. PERIOD : 1s REP. CYCLE : Inf LOGGER : On LOGGER STEP: 1s LOGGER NAME: &LOG113	=>	<b>LOGGER TRIGGER</b> TRIGGER : LEVEL + SOURCE : RMS<1> LEVEL : 12.6 m/s <sup>2</sup> PRE : 0 0m00s POST : 0 0m00s	<>>	<b>LOGGER TRIGGER</b> TRIGGER : LEVEL + SOURCE : RMS<1> LEVEL : 12.6 m/s <sup>2</sup> PRE : 10 0m19s POST : 0 0m00s	...	<b>LOGGER TRIGGER</b> TRIGGER : LEVEL + SOURCE : RMS<1> LEVEL : 12.6 m/s <sup>2</sup> PRE : 30 0m31s POST : 0 0m00s
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LOGGER TRIGGER windows with the PRE selection in vibration mode

Time period of the measurements which are saved in the logger before the fulfilment of the triggering condition can be calculated multiplying the value set in the **PRE** by the value set in the **LOGGER STEP** (path: MENU / INPUT / MEASUREMENT SETUP). The result of the calculation is presented in the same line, at the right side of the display.

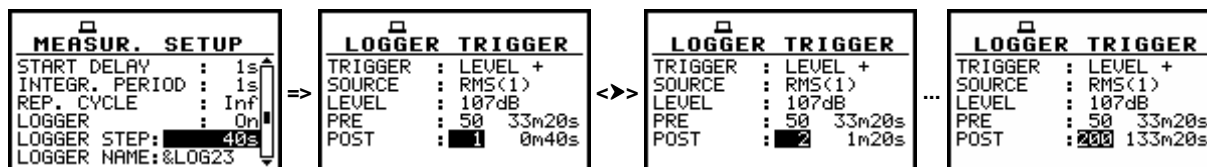


**LOGGER TRIGGER windows with the PRE selection for different LOGGER STEPS**

The value set in the **PRE** is confirmed and the window is closed after pressing the **<ENTER>** push-button. After pressing the **<ESC>** push-button the window is closed ignoring the settings made in the **PRE**.

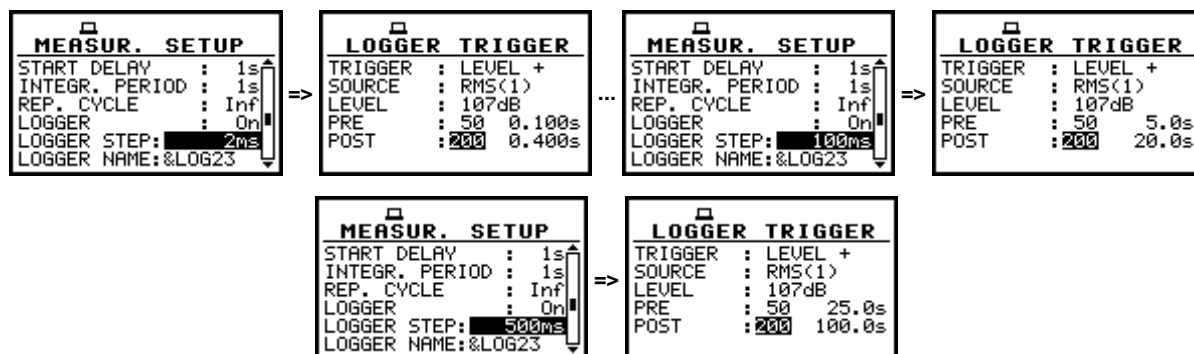
#### 5.4.2.5 Selection of the number of the results to be saved in the logger after the fulfilment of the triggering condition - POST

In the **POST** line the number of the results registered in the logger's file after the fulfilment of the triggering condition can be set. This number is within the limits 0..200 and can be set with the step equal to one using the **<<,>>>** push-buttons or the step equal to 10 using the **<<,>>>** with **<SHIFT>**.

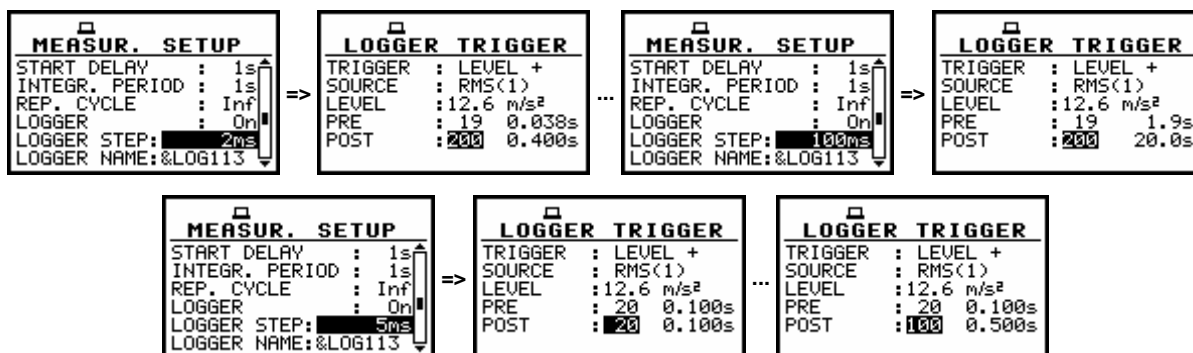


**LOGGER TRIGGER windows with the POST selection**

Time period of the measurements which are saved in the logger after the fulfilment of the triggering condition can be calculated multiplying the value set in the **POST** by the value set in the **LOGGER STEP** (path: MENU / INPUT / MEASUREMENT SETUP). The result of the calculation is presented in the same line, at the right side of the display.



**LOGGER TRIGGER windows with the POST selection for different LOGGER STEPS**

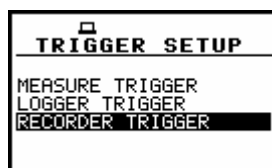


LOGGER TRIGGER windows with the POST selection for different LOGGER STEPS in vibration mode

The value set in the **POST** is confirmed and the window is closed after pressing the **<ENTER>** push-button. After pressing the **<ESC>** push-button the window is closed ignoring the settings made in the **POST**.

### 5.4.3 Trigger parameters for recorder setting - RECORDER TRIGGER

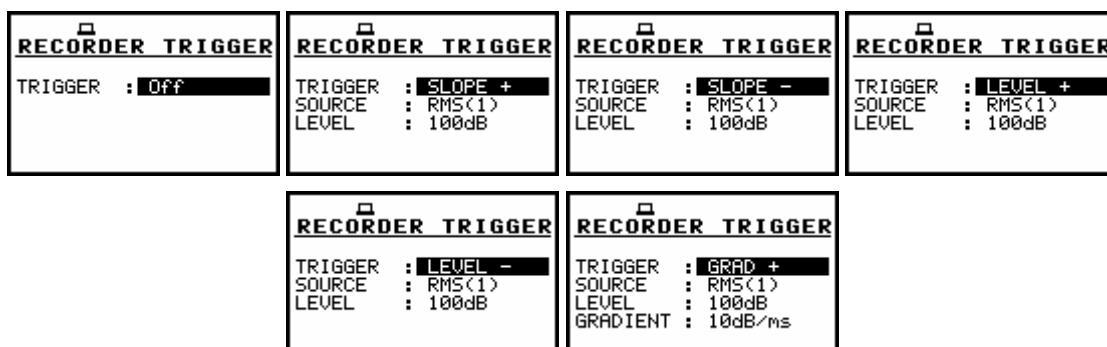
The **RECORDER TRIGGER** enables the user to set the parameters of time domain signal recording on the external USB memory stick (*path: MENU / SETUP / USB-HOST PORT / SRT RECORDING or WAVE RECORDING or EVENT RECORDING*). In order to enter **RECORDER TRIGGER** window the user has to select the **RECORDER TRIGGER** text in the **TRIGGER SETUP** window using the **<<>**, **<>>** push-buttons and press **<ENTER>**.



TRIGGER SETUP window; the RECORDER TRIGGER text highlighted

#### 5.4.3.1 Selecting trigger mode - TRIGGER

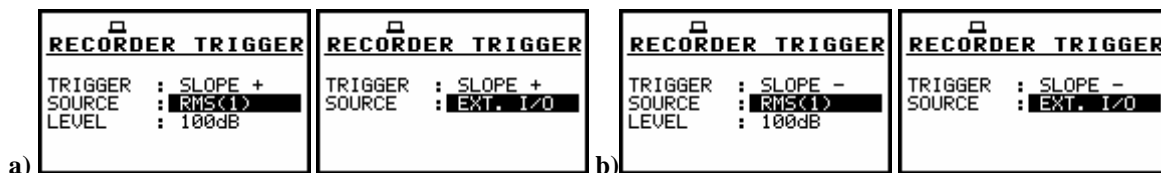
In the **TRIGGER** position following options are available: **Off**, **SLOPE +**, **SLOPE -**, **LEVEL +**, **LEVEL -**, **GRAD +**. The selection is made by pressing **<<>**, **<>>** push-buttons and **<ENTER>** one. The **RECORDER TRIGGER** window is closed ignoring any changes made in there, after pressing any time the **<ESC>** push-button.



RECORDER TRIGGER windows; the TRIGGER selection

### 5.4.3.2 Selecting the triggering signal - SOURCE

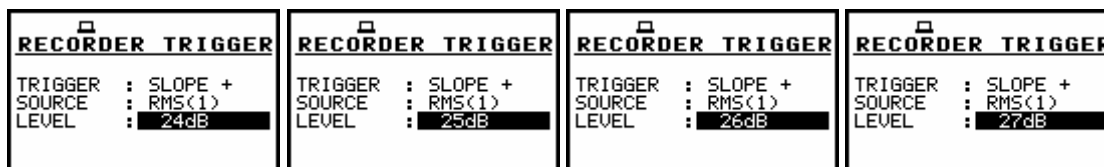
In the case when in the **TRIGGER** position **SLOPE +** or **SLOPE -** is selected it is possible to choose the **SOURCE**. Available sources are **RMS(1)** and **EXT.I/O**. The selection is made using **<<>**, **<>>** push-buttons and pressing **<ENTER>** one. The **RECORDER TRIGGER** window is closed ignoring any changes made in there, after pressing any time the **<ESC>** push-button.



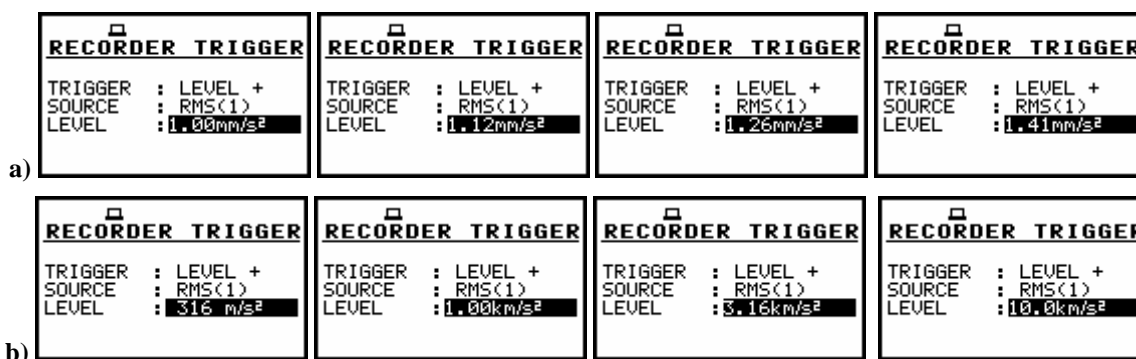
RECORDER TRIGGER windows; the source selection for SLOPE + (a) and SLOPE - (b)

### 5.4.3.3 Selecting level for recording trigger- LEVEL

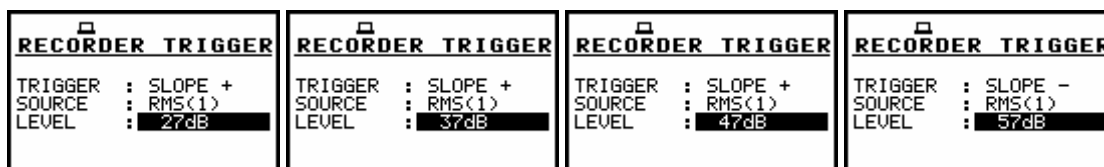
The level of the triggering signal for recording (**LEVEL**) can be set in 1 dB step (or 10 dB steps) from 24 dB to 136 dB range using the **<<>**, **<>>** push-buttons (or **<<>**, **<>>** with **<SHIFT>**). In the case of vibration measurements the level can be expressed not only in decibels (*path: MENU / DISPLAY / DISPLAY SETUP / SCALE / LOG*) but also in linear units (placing in the path *LIN* instead of *LOG*).



RECORDER TRIGGER windows with the LEVEL selection (1 dB step up)



RECORDER TRIGGER windows with the LEVEL selection in vibration mode, level expressed in linear units, 1 dB step up (a) and 10 dB step up (b)



RECORDER TRIGGER windows with the LEVEL selection in sound and vibration mode (10 dB step up)

### 5.4.3.4 Setting the speed of the triggering signal changes - GRADIENT

**GRADIENT** appears on the display when in the **TRIGGER** position the **GRAD +** option is selected. In the **GRADIENT** position it is possible to select the **GRADIENT** value. The available values are from **1 dB/ms** to **100 dB/ms**. The selection is made by pressing **<<>**, **<>>** push-buttons and **<ENTER>** one.

The **RECORDER TRIGGER** window is closed ignoring any changes made in there, after pressing any time the **<ESC>** push-button.

<b>RECORDER TRIGGER</b> TRIGGER : GRAD + SOURCE : RMS<1> LEVEL : 127dB GRADIENT : 1dB/ms	<b>RECORDER TRIGGER</b> TRIGGER : GRAD + SOURCE : RMS<1> LEVEL : 127dB GRADIENT : 2dB/ms	<b>RECORDER TRIGGER</b> TRIGGER : GRAD + SOURCE : RMS<1> LEVEL : 127dB GRADIENT : 3dB/ms	<b>RECORDER TRIGGER</b> TRIGGER : GRAD + SOURCE : RMS<1> LEVEL : 127dB GRADIENT : 4dB/ms
<b>RECORDER TRIGGER</b> TRIGGER : GRAD + SOURCE : RMS<1> LEVEL : 127dB GRADIENT : 65dB/ms	<b>RECORDER TRIGGER</b> TRIGGER : GRAD + SOURCE : RMS<1> LEVEL : 127dB GRADIENT : 66dB/ms	<b>RECORDER TRIGGER</b> TRIGGER : GRAD + SOURCE : RMS<1> LEVEL : 127dB GRADIENT : 67dB/ms	<b>RECORDER TRIGGER</b> TRIGGER : GRAD + SOURCE : RMS<1> LEVEL : 127dB GRADIENT : 68dB/ms

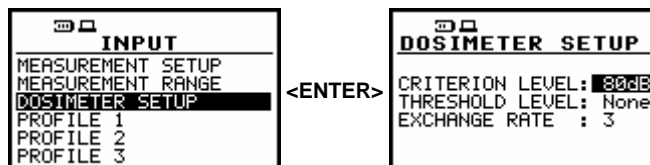
RECORDER TRIGGER windows with the GRADIENT selection (1 dB step up)

<b>RECORDER TRIGGER</b> TRIGGER : GRAD + SOURCE : RMS<1> LEVEL : 127dB GRADIENT : 11dB/ms	<b>RECORDER TRIGGER</b> TRIGGER : GRAD + SOURCE : RMS<1> LEVEL : 127dB GRADIENT : 21dB/ms	<b>RECORDER TRIGGER</b> TRIGGER : GRAD + SOURCE : RMS<1> LEVEL : 127dB GRADIENT : 31dB/ms	<b>RECORDER TRIGGER</b> TRIGGER : GRAD + SOURCE : RMS<1> LEVEL : 127dB GRADIENT : 41dB/ms
<b>RECORDER TRIGGER</b> TRIGGER : GRAD + SOURCE : RMS<1> LEVEL : 127dB GRADIENT : 51dB/ms	<b>RECORDER TRIGGER</b> TRIGGER : GRAD + SOURCE : RMS<1> LEVEL : 127dB GRADIENT : 61dB/ms	<b>RECORDER TRIGGER</b> TRIGGER : GRAD + SOURCE : RMS<1> LEVEL : 127dB GRADIENT : 71dB/ms	<b>RECORDER TRIGGER</b> TRIGGER : GRAD + SOURCE : RMS<1> LEVEL : 127dB GRADIENT : 81dB/ms

RECORDER TRIGGER windows with the GRADIENT selection (10 dB step up)

## 5.5 Selection of dose meter parameters - DOSIMETER SETUP

The **DOSIMETER SETUP** is accessible in the **INPUT** list in the **SOUND METER** mode when the **DOSE METER** function is selected (*path: MENU / FUNCTION / MEASUREMENT FUNCTION*). It is not available in the **VIBRATION METER**. This sub-list is opened after the selection of the **DOSIMETER SETUP** text from the **INPUT** list by means of the **<▲>**, **<▼>** (or **<◀>**, **<▶>**) push-buttons and pressing the **<ENTER>** one. The **DOSIMETER SETUP** consists of the parameters, which influence the calculation of the dose meter results: the **CRITERION LEVEL**, **THRESHOLD LEVEL** and **EXCHANGE RATE** (the definitions of the dose meter results are given in App. D).

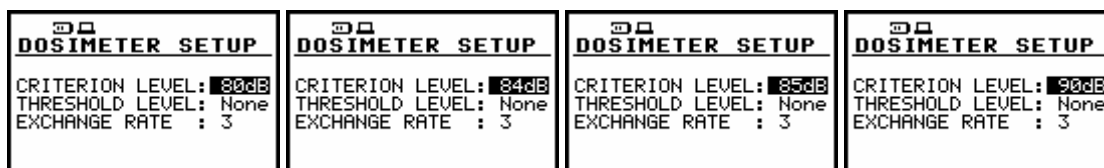


DOSIMETER SETUP selected in the INPUT list and the DOSIMETER SETUP window

### 5.5.1 Setting criterion sound level - CRITERION LEVEL

The criterion sound level influences the calculations of the **DOSE** and **D<sub>8h</sub>** results. The **CRITERION LEVEL** line is accessible after pressing the **<▲>** push-button in the **DOSIMETER SETUP** window. The available values are as follows: **80 dB**, **84 dB**, **85 dB** or **90 dB**. They can be selected by means of the **<◀>**, **<▶>** push-buttons. The confirmation of any change made in the line requires pressing the **<ENTER>** push-button, which simultaneously closes the window.

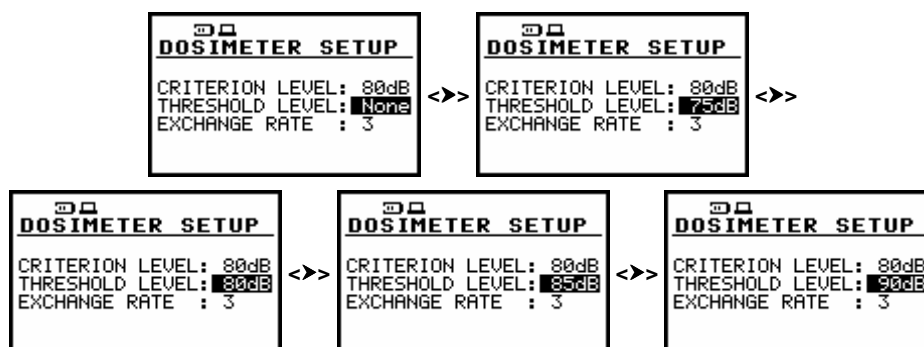
The **DOSIMETER SETUP** is closed ignoring any changes made in there, after pressing any time the **<ESC>** push-button.



DOSIMETER SETUP windows; the CRITERION LEVEL selection

### 5.5.2 Setting criterion sound level - THRESHOLD LEVEL

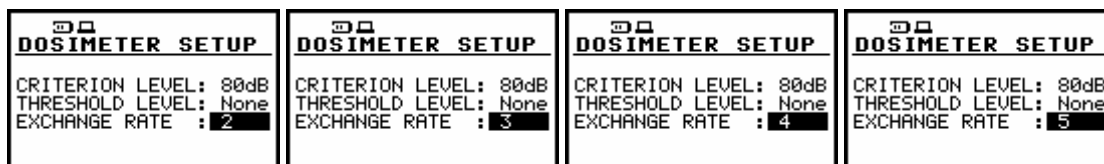
The threshold level influences the calculations of the dose meter results, namely **DOSE**, **D\_8h** and **LAV**. The **THRESHOLD LEVEL** line is accessible after pressing the **<^>**, **<v>** push-buttons in the **DOSIMETER SETUP** window. The available values are as follows: **None**, **75 dB**, **80 dB**, **85 dB** or **90 dB**. They can be selected by means of the **<^>**, **<v>** push-buttons. The confirmation of any change made in the line requires pressing the **<ENTER>** push-button, which simultaneously closes the window. The **DOSIMETER SETUP** is closed ignoring any changes made in there, after pressing any time the **<ESC>** push-button.



DOSIMETER SETUP windows; the THRESHOLD LEVEL selection

### 5.5.3 Setting criterion sound level - EXCHANGE RATE

The exchange rate influences the calculations of the dose meter results, namely **DOSE**, **D\_8h** and **LAV**. The exposure rate equal to three complies with ISO R 1999 "Assessment of Occupational Noise Exposure for Hearing Conservation Purposes", while equal to five complies with the American "Occupational Safety and Health Act" – OSHA. The **EXCHANGE RATE** line is accessible after pressing the **<v>** push-button in the **DOSIMETER SETUP** window. The available values are as follows: **2**, **3**, **4** or **5**. They can be selected by means of the **<^>**, **<v>** push-buttons. The confirmation of any change made in the line requires pressing the **<ENTER>** push-button, which simultaneously closes the window. The **DOSIMETER SETUP** is closed ignoring any changes made in there, after pressing any time the **<ESC>** push-button.



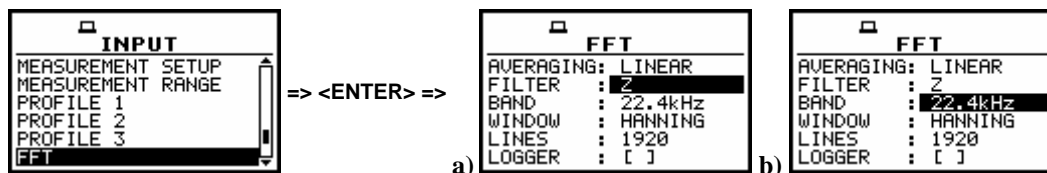
DOSIMETER SETUP windows; the EXCHANGE RATE selection



## 5.6 Selection of FFT analysis parameters - FFT

The **FFT** is accessible in the **INPUT** list when the **FFT** function is selected in **MEASUREMENT FUNCTION** window (path: *MENU / FUNCTION / MEASUREMENT FUNCTION / FFT*). This sub-list is opened after the selection of the **FFT** text from the **INPUT** list by means of the **<▲>**, **<▼>** (or **<◀>**, **<▶>**) push-buttons and pressing the **<ENTER>** one.

The **FFT** consists of the parameters, which influence the calculation and logging the results of the **FFT** analysis: **AVERAGING**, **FILTER**, **BAND**, **WINDOW**, **LINES** and **LOGGER**. The **FFT** window is closed ignoring any changes made in there, after pressing any time the **<ESC>** push-button.



FFT selected in the **INPUT** list and the **FFT** window opened in sound mode (a) and in vibration mode (b)

### 5.6.1 The averaging of spectra in the FFT analysis - AVERAGING

The **AVERAGING** influences the way in which the spectra in the **FFT** analysis are averaged. Up to the internal software version named as 6.04 only **LINEAR** is available (this position can not be accessed and changed).

### 5.6.2 Selecting the weighting filter during the FFT analysis - FILTER

The **FILTER** influences the calculations of the **FFT**. In the case of sound measurements there are **Z**, **A** and **C** filters available. In the case of vibration measurements, only **Z** filter is available and the position is not accessible after entering the **FFT** window. The frequency characteristics of those filters are given in Appendix D. The selection of this parameter is made by means of the **<◀>**, **<▶>** push-buttons. The confirmation of the change made in the line requires pressing the **<ENTER>** push-button, which simultaneously closes the window.

The following weighting filters are available in the case of the **FFT** analysis in sound mode:

- **Z** type 1 according to the IEC 61672-1 standard,
- **A** type 1 according to the IEC 651 and IEC 61672-1 standards,
- **C** type 1 according to the IEC 651 and IEC 61672-1 standards.

In the case of vibration mode, during the **FFT** analysis the following filter is available:

- **Z** type 1 according to the IEC 61672-1 standard.

FFT	FFT	FFT
AVERAGING: LINEAR	AVERAGING: LINEAR	AVERAGING: LINEAR
FILTER : <b>Z</b>	FILTER : <b>A</b>	FILTER : <b>C</b>
BAND : 22.4kHz	BAND : 22.4kHz	BAND : 22.4kHz
WINDOW : HANNING	WINDOW : HANNING	WINDOW : HANNING
LINES : 1920	LINES : 1920	LINES : 1920
LOGGER : [ ]	LOGGER : [ ]	LOGGER : [ ]

FFT window; the **FILTER** selection in sound mode

### 5.6.3 Selecting the analysis band of the signal - BAND

The **BAND** position enables the user to select the band in which the narrow-band analysis of the signal has to be performed. The user has the following possibilities: **22.4 kHz**, **11.2 kHz**, **5.6 kHz**, **2.8 kHz**, **1.4 kHz**, **700 Hz**, **350 Hz**, **175 Hz** and **87.5 Hz**.

The selection of the required value is made by means of the <<>, <>> push-buttons. The confirmation of the change made in the line requires pressing the <ENTER> push-button, which simultaneously closes the window. The **FFT** window is closed ignoring any changes made in there, after pressing any time the <ESC> push-button.

<b>FFT</b> AVERAGING: LINEAR FILTER : 2 BAND : 22.4kHz WINDOW : HANNING LINES : 1920 LOGGER : [ ]	<b>FFT</b> AVERAGING: LINEAR FILTER : 2 BAND : 11.2kHz WINDOW : HANNING LINES : 1920 LOGGER : [ ]	<b>FFT</b> AVERAGING: LINEAR FILTER : 2 BAND : 5.6kHz WINDOW : HANNING LINES : 1920 LOGGER : [ ]
<b>FFT</b> AVERAGING: LINEAR FILTER : 2 BAND : 2.8kHz WINDOW : HANNING LINES : 1920 LOGGER : [ ]	<b>FFT</b> AVERAGING: LINEAR FILTER : 2 BAND : 1.4kHz WINDOW : HANNING LINES : 1920 LOGGER : [ ]	<b>FFT</b> AVERAGING: LINEAR FILTER : 2 BAND : 700Hz WINDOW : HANNING LINES : 1920 LOGGER : [ ]
<b>FFT</b> AVERAGING: LINEAR FILTER : 2 BAND : 350Hz WINDOW : HANNING LINES : 1920 LOGGER : [ ]	<b>FFT</b> AVERAGING: LINEAR FILTER : 2 BAND : 175Hz WINDOW : HANNING LINES : 1920 LOGGER : [ ]	<b>FFT</b> AVERAGING: LINEAR FILTER : 2 BAND : 87.5Hz WINDOW : HANNING LINES : 1920 LOGGER : [ ]

FFT window; the BAND selection

#### 5.6.4 Selecting the time window for the FFT analysis - WINDOW

The **WINDOW** position enables the user to select the coefficients of time window which are used in the **FFT** analysis. Available time windows of the **FFT** analysis are as follows: **HANNING**, **RECTANGLE**, **FLAT TOP**, **KAISER-BESSEL**.

The selection of the window is made by means of the <<>, <>> push-buttons. The confirmation of the change made in the line requires pressing the <ENTER> push-button, which simultaneously closes the window. The **FFT** window is closed ignoring any changes made in there, after pressing any time the <ESC> push-button.

<b>FFT</b> AVERAGING: LINEAR FILTER : 2 BAND : 22.4kHz WINDOW : HANNING LINES : 1920 LOGGER : [ ]	<b>FFT</b> AVERAGING: LINEAR FILTER : 2 BAND : 22.4kHz WINDOW : RECTANGLE LINES : 1920 LOGGER : [ ]	<b>FFT</b> AVERAGING: LINEAR FILTER : 2 BAND : 22.4kHz WINDOW : FLAT TOP LINES : 1920 LOGGER : [ ]	<b>FFT</b> AVERAGING: LINEAR FILTER : 2 BAND : 22.4kHz WINDOW : KAISER-BES LINES : 1920 LOGGER : [ ]
---	---	--	--

FFT sublist; the WINDOW selection

#### 5.6.5 Selecting the number of the lines of FFT analysis - LINES

The **LINES** position enables the user to select the number of lines of the **FFT** analysis. There are three values available: **1920**, **960** and **480**. The selection of the value is made by means of the <<>, <>> push-buttons. The confirmation of the change made in the position requires pressing the <ENTER> push-button, which simultaneously closes the window. The **FFT** window is closed ignoring any changes made in there, after pressing any time the <ESC> push-button.

<b>FFT</b> AVERAGING: LINEAR FILTER : 2 BAND : 22.4kHz WINDOW : HANNING LINES : 1920 LOGGER : [ ]	<b>FFT</b> AVERAGING: LINEAR FILTER : 2 BAND : 22.4kHz WINDOW : HANNING LINES : 960 LOGGER : [ ]	<b>FFT</b> AVERAGING: LINEAR FILTER : 2 BAND : 22.4kHz WINDOW : HANNING LINES : 480 LOGGER : [ ]
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FFT window; the LINES selection

### 5.6.6 Enabling the FFT spectra time history logging - **LOGGER**

The **LOGGER** enables to record spectra of the **FFT** analysis in the logger file. The activation of the logger is possible only if **LOGGER** functionality has been activated in the **MEASUREMENT SETUP** sublist (*path: MENU / INPUT / MEASUREMENT SETUP / LOGGER ON*). In order to switch on the logger of the **FFT** analysis the user has to press the **<>>** push-button and the **<ENTER>** one. If, instead of the **<ENTER>** push-button the **<ESC>** one is pushed, the selection is ignored and the **FFT** sub-list is closed.

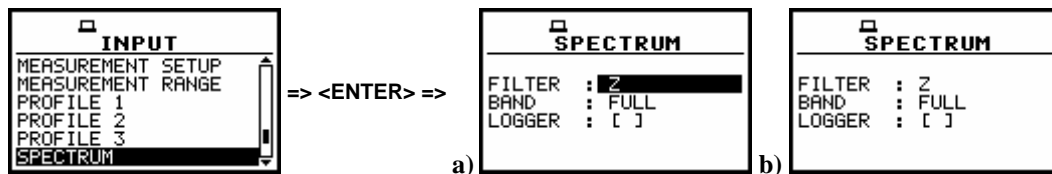
FFT	FFT
AVERAGING: LINEAR	AVERAGING: LINEAR
FILTER : Z	FILTER : Z
BAND : 22.4kHz	BAND : 22.4kHz
WINDOW : HANNING	WINDOW : HANNING
LINES : 1920	LINES : 1920
LOGGER : <input type="checkbox"/>	LOGGER : <input checked="" type="checkbox"/>

FFT window; the **LOGGER** activation

### 5.7 Selection of 1/1 octave and 1/3 octave spectrum parameters - **SPECTRUM**

The **SPECTRUM** appears in the **INPUT** list when the **1/1 OCTAVE** or **1/3 OCTAVE** function is selected in the **MEASUREMENT FUNCTION** (*path: MENU / FUNCTION / MEASUREMENT FUNCTION / 1/1 OCTAVE or 1/3 OCTAVE*). This sub-list is opened after the selection of the **SPECTRUM** text from the **INPUT** list by means of the **<▲>**, **<▼>** (or **<<>**, **<>>**) push-buttons and pressing the **<ENTER>** one.

The **SPECTRUM** consists of the parameters, which influence the calculation and logging the results of **1/1 OCTAVE** or **1/3 OCTAVE** analysis: **FILTER**, **BAND** and **LOGGER**. The **SPECTRUM** window is closed ignoring any changes made in there, after pressing any time the **<ESC>** push-button.



**SPECTRUM** selected in the **INPUT** list and the **SPECTRUM** window opened in sound mode (a) and in vibration mode (b)

#### 5.7.1 Selecting the weighting filter during 1/1 OCTAVE or 1/3 OCTAVE analysis - **FILTER**

The **FILTER** influences the calculations of **1/1 OCTAVE** or **1/3 OCTAVE** analysis. In the case of sound measurements there are **Z**, **A** and **C** filters available. In the case of vibration measurements only **Z** filter is available and the position is not accessible after entering the **SPECTRUM** window. The frequency characteristics of those filters are given in Appendix D.

The selection of this parameter is made by means of the **<<>**, **<>>** push-buttons. The confirmation of the change made in the line requires pressing the **<ENTER>** push-button, which simultaneously closes the window.

The following weighting filters are available in the case of **1/1 OCTAVE** or **1/3 OCTAVE** analysis in sound mode:

- **Z** type 1 according to the IEC 61672-1 standard,
- **A** type 1 according to the IEC 651 and IEC 61672-1 standards,
- **C** type 1 according to the IEC 651 and IEC 61672-1 standards.

In the case of vibration mode, during **1/1 OCTAVE** or **1/3 OCTAVE** analysis the following filter is available:

- **Z** type 1 according to the IEC 61672-1 standard.

SPECTRUM		SPECTRUM		SPECTRUM	
FILTER	: Z	FILTER	: A	FILTER	: C
BAND	: FULL	BAND	: FULL	BAND	: FULL
LOGGER	: [ ]	LOGGER	: [ ]	LOGGER	: [ ]

SPECTRUM window; the FILTER selection in sound mode

### 5.7.2 Selecting the band during the 1/1 OCTAVE or 1/3 OCTAVE analysis - BAND

The **BAND** position enables the user to select the band in which the **1/1 OCTAVE** or **1/3 OCTAVE** analysis of the signal has to be performed. Available values of the bands of the analysis are as follows: **AUDIO**, **FULL** - in the case of sound mode - and **FULL** - in the case of vibration mode. The selection of this parameter is made by means of the <<>, <>> push-buttons. The confirmation of the change made in the line requires pressing the <ENTER> push-button, which simultaneously closes the window. The **SPECTRUM** window is closed ignoring any changes made in there, after pressing any time the <ESC> push-button.

SPECTRUM		SPECTRUM	
FILTER	: Z	FILTER	: Z
BAND	: FULL	BAND	: AUDIO
LOGGER	: [ ]	LOGGER	: [ ]

SPECTRUM window; the BAND selection in sound mode

### 5.7.3 Activation of logger for 1/1 OCTAVE or 1/3 OCTAVE analysis results - LOGGER

The **RMS** result from **1/1 OCTAVE** or **1/3 OCTAVE** analysis can be saved in the logger's file of the instrument (or on the USB memory stick).

The activation is made by placing a special character in the **LOGGER** position. The activation is possible when the **LOGGER** functionality is switched on in the **MEASUREMENT SETUP** window (*path: MENU / INPUT / MEASUREMENT SETUP / LOGGER*).

If the **LOGGER** functionality is switched off, the position is not accessible. The confirmation of the change made in the position requires pressing the <ENTER> push-button, which simultaneously closes the window. The **SPECTRUM** window is closed ignoring any changes made in there, after pressing any time the <ESC> push-button.

SPECTRUM		SPECTRUM	
FILTER	: Z	FILTER	: Z
BAND	: FULL	BAND	: FULL
LOGGER	: [ ]	LOGGER	: [✓]

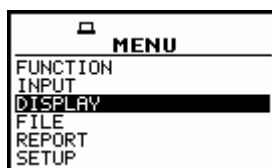
SPECTRUM window; the LOGGER selection

## 6 DATA AVAILABLE ON THE DISPLAY - DISPLAY

In order to open the **DISPLAY** list the user has to:

- press the **<MENU>** push-button,
- select from the main list, using the **<▲>**, **<▼>** (or **<◀>**, **<▶>**) push-buttons, the **DISPLAY** text (highlight it inversely),
- press the **<ENTER>** push-button.

Pressing the **<SHIFT>** and **<▲>** (or **<SHIFT>** and **<◀>**) results in a movement to the first position of the opened list and pressing the **<SHIFT>** and **<▼>** (or **<SHIFT>** and **<▶>**) results in a movement to the last position of the opened list.

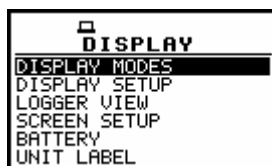


Display in the main list; the **DISPLAY** text highlighted (displayed inversely)

The **DISPLAY** list is used for setting the various parameters, which are mainly dedicated for the control of the display. The following items are present on this list:

<b>DISPLAY MODES</b>	enables one to select the mode of the measurement results presentation;
<b>DISPLAY SETUP</b>	enables one to change the scale in the graphical modes of result's presentation and the parameters of the logger's result presentation;
<b>LOGGER VIEW</b>	enables one to select and present the results stored in the logger's files;
<b>SCREEN SETUP</b>	enables one to set the contrast and the switch on/off the backlight timeout of the instrument's display;
<b>BATTERY</b>	it informs the user about the source of powering of the instrument and current power supply voltage;
<b>UNIT LABEL</b>	informs the user about the serial number of the instrument, the version of the internal software and the standards to which conform the measurement results.

In each available position any change is performed by means of the **<◀>**, **<▶>** and **<▲>**, **<▼>** push-buttons. In order to confirm the selection the **<ENTER>** push-button has to be pressed. After this confirmation, the opened window or list is closed. In order to ignore any changes made in the opened window or list the user has to press the **<ESC>** push-button.



Display with the **DISPLAY** list

### 6.1 Selection of the modes of measurement results presentation - **DISPLAY MODES**

The **DISPLAY MODES** sub-list enables one the selection of the currently available modes of displaying the results of measurement. The selection is made by placing or replacing the special

character in the inversely displayed position of the **DISPLAY MODES** sub-list by means of the <<>, <>> push-buttons. In order to confirm the selection the user has to press the <ENTER> push-button. The mode of the results presentation is related with the selection of the instrument's function (**SLM** or **VLM**, **1/1 OCTAVE**, **1/3 OCTAVE**, **FFT** analyser etc.). Only One Profile mode cannot be switched off independently from the current mode of the instrument.



**Notice:** The abbreviation **SM** – **Sound Mode** refers to the sound mode (**SOUND METER**) and the proper functions dedicated for the measurement and analysis of the acoustic signal: **LEVEL METER**, **1/1 OCTAVE**, **1/3 OCTAVE**, **FFT**, **DOSIMETER**, **RT60**; **VM** – **Vibration Mode** refers to the vibration mode (**VIBRATION METER**) and the proper functions dedicated for the measurement and analysis of the vibration signal: **LEVEL METER**, **1/1 OCTAVE**, **1/3 OCTAVE** and **FFT**

For the **Sound Level Meter** the following possibilities of the measurement results presentation are available:

- **One Profile**,
- **3 PROFILES**,
- **STATISTICS**,
- **LOGGER** (time history),
- **FILE INFO**.

<div>a)</div> <div> <div> <div></div> <div>DISPLAY MODES</div> </div> <div> <div>SPECTRUM</div> <div>:</div> <div>[ ]</div> </div> <div> <div>3 PROFILES</div> <div>:</div> <div>[✓]</div> </div> <div> <div>STATISTICS</div> <div>:</div> <div>[✓]</div> </div> <div> <div>LOGGER</div> <div>:</div> <div>[✓]</div> </div> <div> <div>FILE INFO</div> <div>:</div> <div>[ ]</div> </div> </div>	<div>b)</div> <div> <div> <div></div> <div>DISPLAY MODES</div> </div> <div> <div>SPECTRUM</div> <div>:</div> <div>[ ]</div> </div> <div> <div>3 PROFILES</div> <div>:</div> <div>[ ]</div> </div> <div> <div>STATISTICS</div> <div>:</div> <div>[ ]</div> </div> <div> <div>LOGGER</div> <div>:</div> <div>[✓]</div> </div> <div> <div>FILE INFO</div> <div>:</div> <div>[ ]</div> </div> </div>
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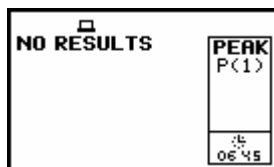
**DISPLAY MODES windows in SM**

For the **Vibration Level Meter** the following possibilities of the measurement results presentation are available:

- **One Profile**,
- **3 PROFILES**,
- **LOGGER** (time history)
- **FILE INFO**.

**DISPLAY MODES windows in VM**

The **LOGGER** mode of results presentation is available if, and only if, the data from at least one profile are logged in the logger's file. If the **LOGGER** position is switched on ([✓]) but there was nothing stored in the logger's file (in the selected profile there were **selected results** (**PEAK**, **MAX**, **MIN** or **RMS** in the case of **SM** and **PEAK**, **P-P**, **MAX** or **RMS** in the case of **VM**) but the instrument still **waits** for the logger results, i.e. the **LOGGER STEP** is long, the **NO RESULTS** text is displayed. When the **LOGGER** is selected as active and the **LOGGER** positions in all profiles are not selected, the **LOGGER** mode of results presentation is skipped.



Display in the LOGGER mode when there is nothing in the logger to be displayed (after setting LOGGER as active)

The display with the measurement result in so-called one profile mode is presented below. On the top of the display (under the icons line) there are the following data: the function name (**SPL, LEQ, SEL, Lden, LEPd, Ltm3, Ltm5, Lxx, OVL, PEAK, MAX, MIN** in the case of sound measurements or **RMS, VDV, OVL, PEAK, P-P, MTVV** in the case of vibration measurements), the detector time constant (in **SM** when the detector is exponential: **IMP., FAST, SLOW** or **Lin** when the detector is linear and in **VM**: **100 ms, 125 ms, .. 10.0 s, ..**).

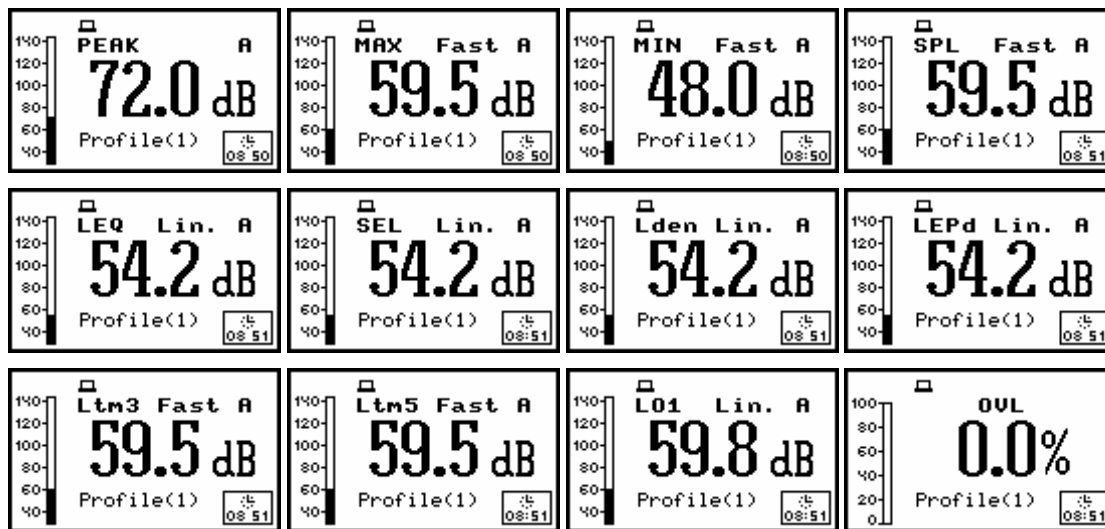


**Notice:** In the case of **LINEAR RMS INTEGRATION** (path: **MENU / SETUP / RMS INTEGRATION / LINEAR**) for **LEQ, SEL, SEL8, E, E\_8h, LEPd, PSEL** and **Lxx** results on the display appears **Lin.** instead of **IMP., FAST** or **SLOW** detector time constant.



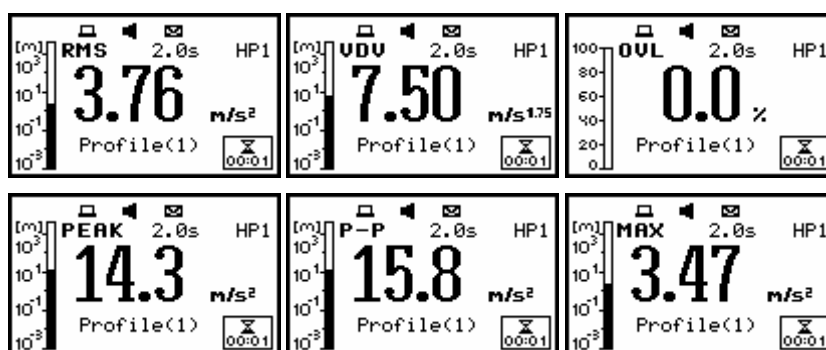
**Notice:** There is not any indication of the detector in the case of **PEAK** and **OVL** results.

The name of the implemented filter (path: **MENU / INPUT / PROFILE x / FILTER**) is presented as the last element of the first line (**A, C, Z** in **SM** or **HP1, HP3, HP10, Vel1, Vel3, Vel10, VelMF, Dil1, Dil3, Dil10, KB, Wk, Wd, Wc, Wj, Wm, Wh, Wg, Wb** in **VM**).

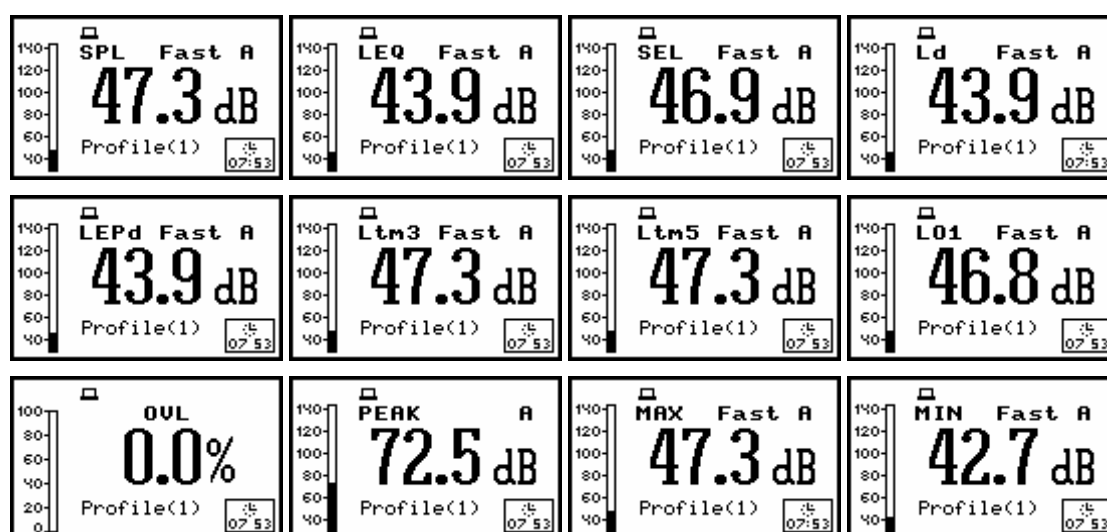


Measurement results in SM, made with linear integration, presented in one profile mode

The result of the measurement together with its unit (dB or  $\text{m/s}^2$  for almost all results and % only for **OVL**) is given in the second line. The profile, the results are coming from, is visible in the bottom of the display (**Profile(1), Profile(2)** or **Profile(3)**). The vertical line showing the value of the result in the analogue-like form together with the scale is presented at the left side of the display. The real time clock is visible in the bottom right corner of the display. The selection of the result is made pressing the **<<>**, **>>>** push-buttons.

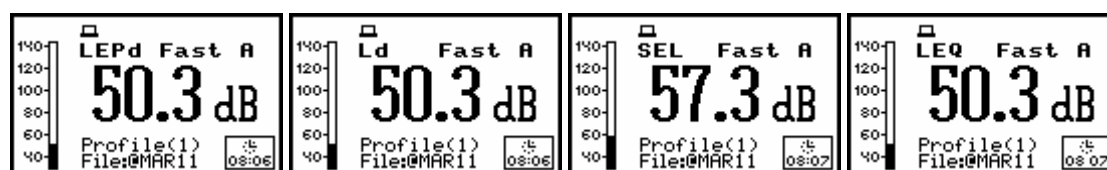


Measurement results in VM presented in one profile mode



Measurement results, made with exponential integration in SM, presented in one profile mode

If the measurement results are saved in the internal memory in a file, its name is presented under the profile's number.



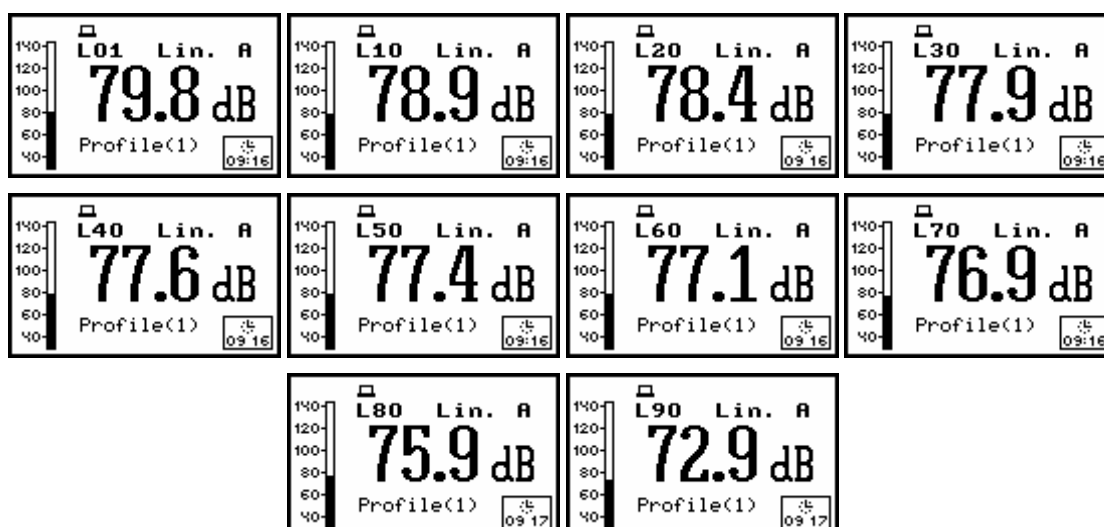
Measurement results, made with exponential integration in SM, saved in the file named MAR11, presented in one profile mode

The profile is changed after pressing the <SHIFT> and <▲> or <SHIFT> and <▼> push-buttons. The same result can be achieved after pressing the <ALT> and <◀> or <ALT> and <▶> push-buttons.

The statistics (i.e. these set in the instrument as a default: L01, L10, L20, L30, L40, L50, L60, L70, L80 and L90), which are available only in SM, are visible in one profile's mode after pressing the <SHIFT> and <◀> or <SHIFT> and <▶> push-buttons.

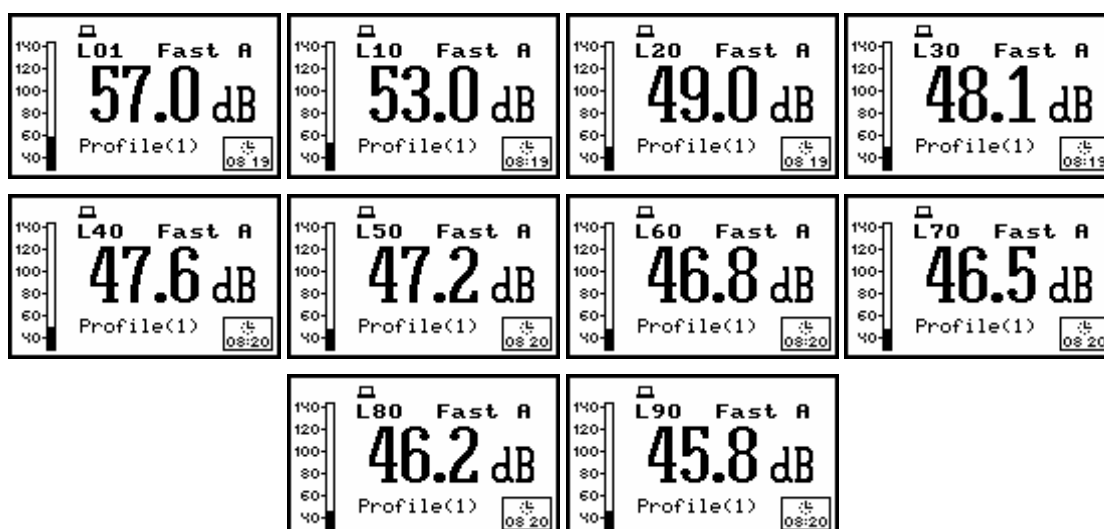
The user can make the selection of these ten statistics Lxx in the **STATISTICAL LEVELS** window (path: MENU / SETUP / STATISTICAL LEVELS). The statistics are not longer displayed after pressing the <▶> or the <◀> push-buttons.





Displays with the statistics made with linear integration presented in one profile mode

The change of the RMS integration (*path: MENU / SETUP / RMS INTEGRATION*) from linear to exponential influence a little bit the presentation – instead of **Lin.** there is the time constant (**FAST**, **SLOW**, **IMP.**) on the display.

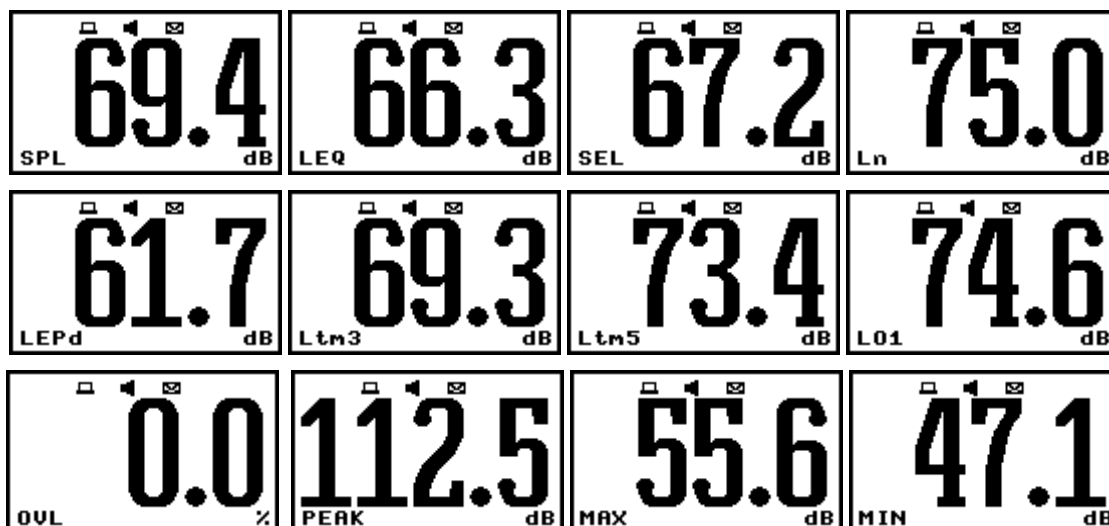


Displays with the statistics made with exponential integration presented in one profile mode

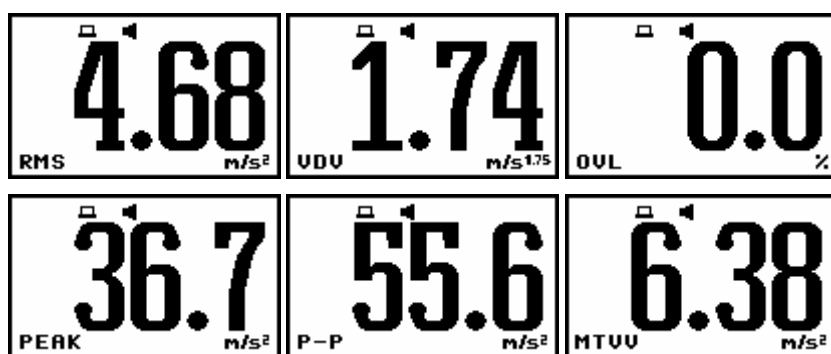
There is also possible to present differently the measurement data in one profile after pressing the **<ALT>** and **<▲>** or **<ALT>** and **<▼>** push-buttons. In this case, the result is displayed with the biggest possible fonts. The name of the result together with the units is given in the bottom line. The current result from a selected profile is changed after pressing the **<▶>** or the **<◀>** push-buttons. The profile the results are coming from is changed after pressing the **<SHIFT>** and **<▲>** or **<SHIFT>** and **<▼>** but the **profile's number is not visible** on the display.

The same result can be achieved after pressing the **<ALT>** and **<◀>** or **<ALT>** and **<▶>** push-buttons. When the statistics level **Lxx** is presented, the another levels from the set of ten values are available after pressing the **<SHIFT>** and **<◀>** or **<SHIFT>** and **<▶>** push-buttons.

The presentation mode is changed (to **3 PROFILES**, **STATISTICS** and **LOGGER** or **FILE INFO** if all of them are currently available) after pressing the **<▲>** or **<▼>** push-buttons.



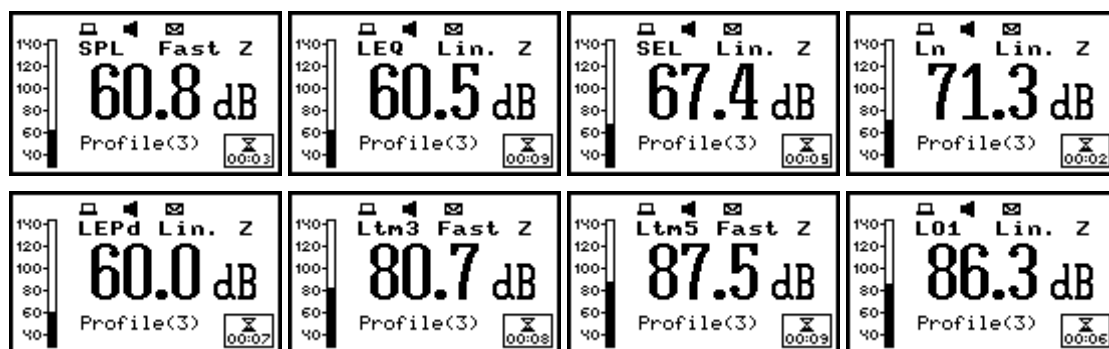
Measurement results in SM and unknown profile presented with the biggest fonts in one profile mode



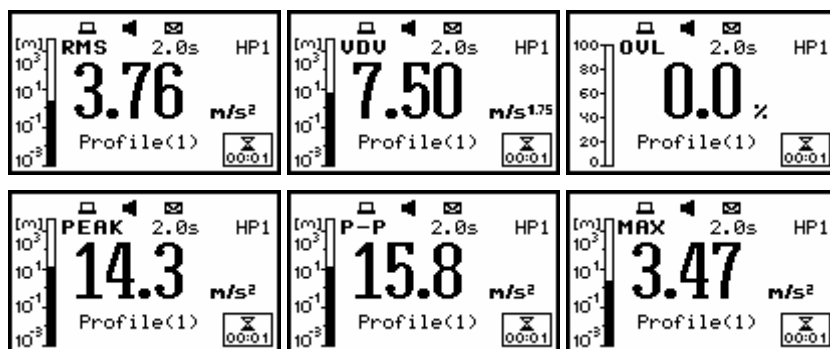
Measurement results in VM and unknow profile presented with the biggest fonts in one profile mode

When the measurements are performed, what is indicated on the display by the **loudspeaker** icon, the clock displayed in the right bottom shows the current second of the measurement. The value presented there belongs to the range [1, INTEGRATION PERIOD].

The **envelope** icon visible above and below indicates that the selected results from the profiles (path: MENU / INPUT / PROFILE x) are logged.



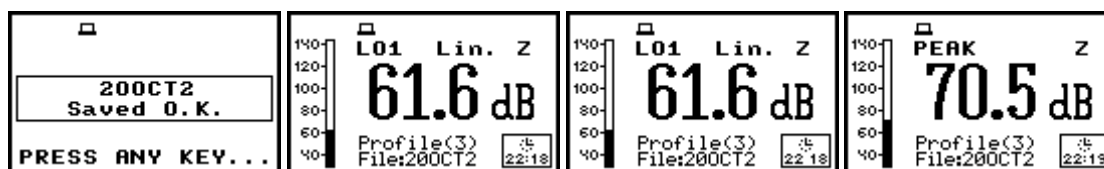
Displays during the measurement performed in SOUND LEVEL METER mode with the active LOGGER (an envelope icon)



Displays during the measurement performed in VM with the active **LOGGER** (an envelope icon)

The results can be saved using **SAVE**, **SAVE NEXT** or **AUTO SAVE** functions after the end of the measurements caused by the selected reasons.

It is not possible to save the results during the execution of the measurements. In the case when the saving was done, the name of the logger's file is presented in the bottom line of one profile display and the clock starts to show the real time.



Displays after stopping the measurements with the name of the logger's file the data are saved

The display in one profile mode with the results coming from the **DOSE METER** (in **SM**) looks nearly the same as it was described above for the **LEVEL METER** mode.

The measurement result (**PEAK**, **MAX**, **MIN**, **SPL**, **DOSE**, **D\_8h**, **LAV**, **LEQ**, **SEL**, **SEL8**, **E**, **E\_8h**, **LEPd**, **PSEL**, **Ltm3**, **Ltm5**, **Lxx** and **OVL** – cf. the definitions in App. D) is presented in the first line of the display.

Next, either the detector (*path: MENU / INPUT / PROFILE x / DETECTOR*) time constant (**Fast**, **Slow** or **Impulse**) is given for all results (except **PEAK** and **OVL**) or in the case of **LINEAR RMS INTEGRATION** (*path: MENU / SETUP / RMS INTEGRATION / LINEAR*) for **LEQ**, **SEL**, **SEL8**, **E**, **E\_8h**, **LEPd**, **PSEL** and **Lxx** results the **Lin.** text appears on the display.



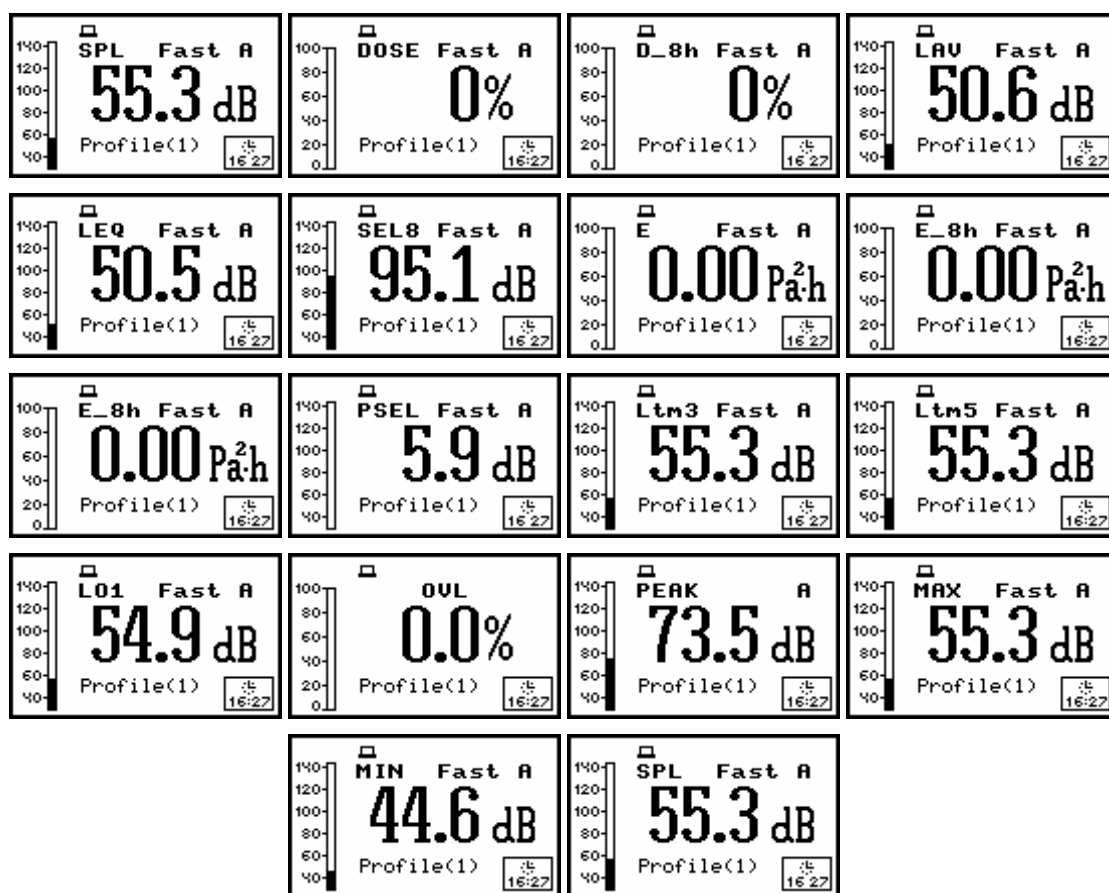
**Notice:** There is not any indication of the detector in the case of **PEAK** and **OVL** results.

The name of the implemented filter (*path: MENU / INPUT / PROFILE x / FILTER*) is presented as the last element of the first line (**A**, **C** or **Z**).

The result of the measurement together with its unit (dB for almost all results, % - for **DOSE**, **D\_8h** and **OVL** and Pa<sup>2</sup>h for **E** and **E\_8h**) is given in the second line. The profile, the results are coming from, is visible in the bottom of the display (**Profile(1)**, **Profile(2)** or **Profile(3)**).

The line showing the value of the result in the analogue-like form together with the appropriate scale is presented at the left side of the display. The real time clock is visible in the bottom right corner of the display.

The selection of the result is made pressing the <<> and <>> push-buttons. If the measurement results are saved in the internal memory in a file, its name is presented under the profile's number.



Measurement results from DOSE METER, made with exponential integration, presented in one profile mode

### 6.1.1 Switching on/off spectrum view - SPECTRUM

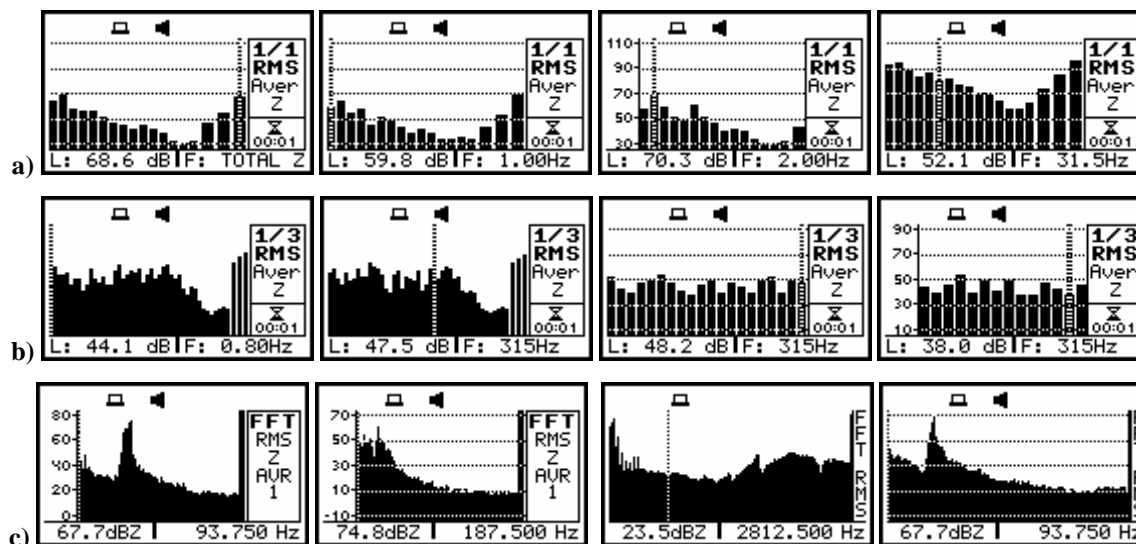
The **SPECTRUM** position is accessible only in **1/1 OCTAVE**, **1/3 OCTAVE** and **FFT** function (*path: MENU / FUNCTION / MEASUREMENT FUNCTION*). The possibility of the measurement results presentation in **SPECTRUM** can be switched on or off placing or replacing the special character in the displayed inversely line with the **SPECTRUM** text by means of the <<>>, <>>> push-buttons. In order to confirm the selection the user has to press the <ENTER> push-button. This confirmation closes also the **DISPLAY MODES** sub-list. The sub-list can be also closed after pressing the <ESC> push-button but the settings made there are ignored.

DISPLAY MODES		DISPLAY MODES	
SPECTRUM	: <input checked="" type="checkbox"/>	SPECTRUM	: <input type="checkbox"/>
3 PROFILES	: <input type="checkbox"/>	3 PROFILES	: <input checked="" type="checkbox"/>
STATISTICS	: <input type="checkbox"/>	STATISTICS	: <input checked="" type="checkbox"/>
LOGGER	: <input type="checkbox"/>	LOGGER	: <input checked="" type="checkbox"/>
FILE INFO	: <input type="checkbox"/>	FILE INFO	: <input type="checkbox"/>

DISPLAY MODES windows in SM; SPECTRUM position accessible

DISPLAY MODES		DISPLAY MODES	
SPECTRUM	: <input checked="" type="checkbox"/>	SPECTRUM	: <input type="checkbox"/>
3 PROFILES	: <input checked="" type="checkbox"/>	3 PROFILES	: <input checked="" type="checkbox"/>
LOGGER	: <input checked="" type="checkbox"/>	LOGGER	: <input checked="" type="checkbox"/>
FILE INFO	: <input type="checkbox"/>	FILE INFO	: <input type="checkbox"/>

DISPLAY MODES windows in VM



Displays in SPECTRUM mode for 1/1 OCTAVE (a), 1/3 OCTAVE (b) and FFT (c)

### 6.1.2 Switching on/off three profiles view - 3 PROFILES

The possibility of the measurement results presentation in **3 PROFILES** can be switched on or off placing or replacing the special character in the displayed inversely line with the **3 PROFILES** text by means of the <<>, <>> push-buttons. In order to confirm the selection the user has to press the <ENTER> push-button. This confirmation closes also the **DISPLAY MODES** sub-list. The sub-list can be also closed after pressing the <ESC> push-button but the settings made there are ignored.

DISPLAY MODES		DISPLAY MODES	
SPECTRUM	: [ ]	SPECTRUM	: [ ]
3 PROFILES	: [✓]	3 PROFILES	: [✓]
STATISTICS	: [✓]	STATISTICS	: [✓]
LOGGER	: [✓]	LOGGER	: [✓]
FILE INFO	: [ ]	FILE INFO	: [ ]

Setting on and off the accessibility of three profiles presentation mode

The exemplary measurement results presented in the **3 PROFILES** mode when the results from three profiles are on the display are given below. In the case of the **3 PROFILES** in three consecutive lines the following data are seen: the name of the function, the result together with the units, the filters and detector time constants in each profile (in the case of sound mode) and (in the case of vibration mode) the profile number (**P(1)**, **P(2)**, **P(3)**). The current real time, the profile from which the result is displayed inversely and the name of the file, in which the results are saved, are displayed at the bottom. At the right bottom, there is another clock, which displays real time in the case when the measurements are performed and the current second of the measurement – in the opposite case. The **PEAK** result does not depend on the detector type, so the corresponding place remains empty. In the case of sound measurements when the measurement result (**LEQ**, **SEL**, **Lden**, **LEPd** and **Lxx**) depends on the linear RMS integration currently set in the **RMS INTEGRATION** (path: **MENU / SETUP / RMS INTEGRATION**), the **L** is placed instead of the letter **F**, **S** or **I** (**Fast**, **Slow**, **Impulse**). In the case of the exponential RMS integration, the kind of this detector is displayed (**F**, **S** or **I**).

LEQ 39.8dB A L		OVL 0.0%		RMS 288 mm/s² P(1)	
SEL 47.8dB C L		PEAK 80.8dB C		PEAK 617 mm/s² P(2)	
SPL 60.2dB Z F		L01 71.7dB Z L		MTUV 138 mm/s² P(3)	
15:05	Profile(2)	12:13	Profile(3)	17:46	Profile(1)
	File:16OCT2				File:13APR0
	15:05		12:13		00:01

Measurement results in 3 PROFILES mode

The presented result in a selected profile is changed using the <<>, <>> push-buttons as presented below for sound and vibration measurements.

<b>PEAK</b> 79.2dB A	<b>PEAK</b> 79.2dB A	<b>PEAK</b> 79.2dB A	<b>PEAK</b> 79.2dB A
<b>PEAK</b> 80.8dB C	<b>PEAK</b> 80.8dB C	<b>PEAK</b> 80.8dB C	<b>PEAK</b> 80.8dB C
<b>PEAK</b> 80.6dB Z	<b>MAX</b> 70.7dB Z F	<b>MIN</b> 53.5dB Z F	<b>SPL</b> 65.6dB Z F
Profile(3)	Profile(3)	Profile(3)	Profile(3)

Results in 3 PROFILES mode (SM); selection of the result in a profile

<b>RMS</b> 288 mm/s <sup>2</sup> P(1)	<b>UDV</b> 351 mm/s <sup>1.5</sup> P(1)	<b>OVL</b> 0.0% P(1)	<b>TIME</b> 00:00:01 P(1)
<b>PEAK</b> 617 mm/s <sup>2</sup> P(2)	<b>PEAK</b> 617 mm/s <sup>2</sup> P(2)	<b>PEAK</b> 617 mm/s <sup>2</sup> P(2)	<b>PEAK</b> 617 mm/s <sup>2</sup> P(2)
<b>MTVV</b> 138 mm/s <sup>2</sup> P(3)	<b>MTVV</b> 138 mm/s <sup>2</sup> P(3)	<b>MTVV</b> 138 mm/s <sup>2</sup> P(3)	<b>MTVV</b> 138 mm/s <sup>2</sup> P(3)
Profile(1)	Profile(1)	Profile(1)	Profile(1)

Results in 3 PROFILES mode (VM); selection of the result in a profile

The change of the selected (displayed inversely) profile is done pressing the <SHIFT> and <V> or <SHIFT> and <A> push-buttons. The same result can be achieved after pressing the <ALT> and <<> or <ALT> and <>> push-buttons.

<b>PEAK</b> 79.2dB A	<b>PEAK</b> 79.2dB A	<b>PEAK</b> 79.2dB A
<b>PEAK</b> 80.8dB C	<b>PEAK</b> 80.8dB C	<b>PEAK</b> 80.8dB C
<b>L01</b> 71.7dB Z L	<b>L01</b> 71.7dB Z L	<b>L01</b> 71.7dB Z L
Profile(1)	Profile(2)	Profile(3)

Results in 3 PROFILES mode; selection of the profile

Ten statistics set by the user (path: MENU / SETUP / STATISTICAL LEVELS) or set in the instrument as a default (L01, L10, L20, L30, L40, L50, L60, L70, L80 and L90) are visible in this mode after pressing the <SHIFT> and <>> or <SHIFT> and <<> push-buttons.

<b>OVL</b> 0.0%	<b>OVL</b> 0.0%	<b>OVL</b> 0.0%	<b>OVL</b> 0.0%
<b>PEAK</b> 80.8dB C	<b>PEAK</b> 80.8dB C	<b>PEAK</b> 80.8dB C	<b>PEAK</b> 80.8dB C
<b>L01</b> 71.7dB Z L	<b>L10</b> 69.9dB Z L	<b>L20</b> 68.3dB Z L	<b>L30</b> 67.6dB Z L
Profile(3)	Profile(3)	Profile(3)	Profile(3)

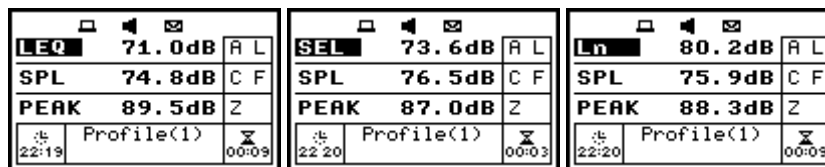
<b>OVL</b> 0.0%	<b>OVL</b> 0.0%	<b>OVL</b> 0.0%	<b>OVL</b> 0.0%
<b>PEAK</b> 80.8dB C	<b>PEAK</b> 80.8dB C	<b>PEAK</b> 80.8dB C	<b>PEAK</b> 80.8dB C
<b>L40</b> 66.9dB Z L	<b>L50</b> 65.9dB Z L	<b>L60</b> 59.4dB Z L	<b>L70</b> 57.6dB Z L
Profile(3)	Profile(3)	Profile(3)	Profile(3)

<b>OVL</b> 0.0%	<b>OVL</b> 0.0%
<b>PEAK</b> 80.8dB C	<b>PEAK</b> 80.8dB C
<b>L80</b> 56.9dB Z L	<b>L90</b> 54.9dB Z L
Profile(3)	Profile(3)

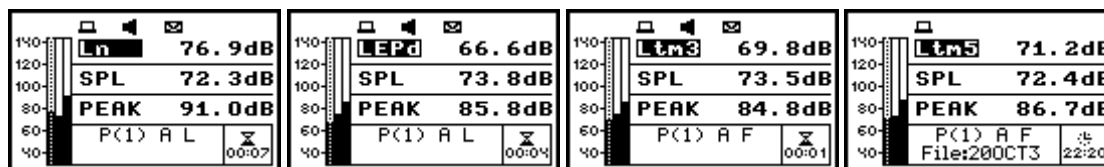
Displays with the statistics made with linear integration presented in 3 PROFILES mode

During the measurements, which are indicated by the **loudspeaker** icon, the current time from the range [1, INTEGRATION PERIOD] is displayed on the right bottom clock. The **envelope** icon indicates that results selected in the profiles (path: MENU / INPUT / PROFILE x) are logged.



Displays during the measurement performed in SM with the active LOGGER

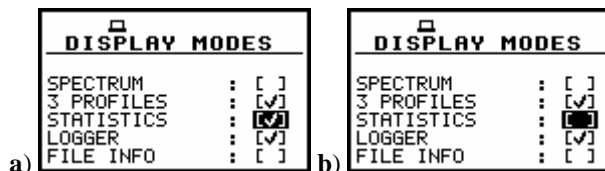
There is also possible to present differently the measurement data in **3 PROFILES** after pressing the **<ALT>** and **<▲>** or **<ALT>** and **<▼>** push-buttons. In this case, at the left side of the display three analogue-like indicators are shown, each one for the selected result from a profile. The currently active profile is marked by the cursor and inversely displayed name of the function. The filter selected in that profile and the integration type (in the case of the linear one) or the detector type (in the case of exponential) are written below the measurement results. During the measurements, the bottom right clock displays the current time from the range [1, **INTEGRATION PERIOD**]. The current result from a selected profile is changed after pressing the **<▶>** or the **<◀>** push-buttons. The profile the results are coming from is changed after pressing the **<SHIFT>** and **<▲>** or **<SHIFT>** and **<▼>**. The same result can be achieved after pressing the **<ALT>** and **<◀>** or **<ALT>** and **<▶>** push-buttons. When the statistics level **Lxx** is presented, the another levels from the set of ten values are available after pressing the **<SHIFT>** and **<◀>** or **<SHIFT>** and **<▶>** push-buttons. The results can be saved using **SAVE**, **SAVE NEXT** or **AUTO SAVE** functions after the end of the measurements caused by the selected reasons. It is not possible to save the results during the execution of the measurements. In the case when the saving was done, the name of the logger's file is presented in the bottom line of one profile display and the clock starts to show the real time. The presentation mode is changed (to one profile, **STATISTICS** and **LOGGER** or **FILE INFO** if all of them are currently available) after pressing the **<▲>** or **<▼>** push-buttons.



Displays during the measurement performed in LEVEL METER mode with the active LOGGER (the first three) and after saving the results (the last one)

### 6.1.3 Setting on/off statistics view in SM - STATISTICS

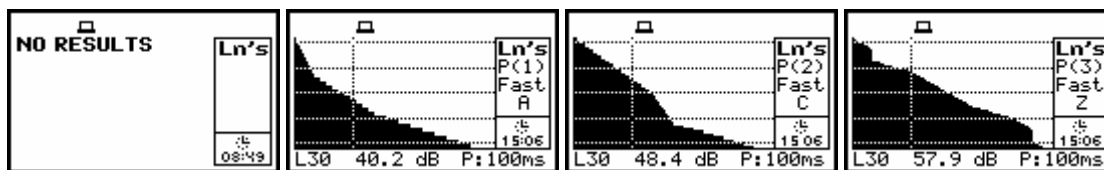
The possibility of the statistics results presentation can be switched on or off placing or replacing the special character in the displayed inversely line with the **STATISTICS** text by means of the **<◀>**, **<▶>** push-buttons. In order to confirm the selection the user has to press the **<ENTER>** push-button. This confirmation closes also the **DISPLAY MODES** sub-list. The sub-list can be also closed after pressing the **<ESC>** push-button but the settings made there are ignored. The **STATISTICS** mode is taken off from the **DISPLAY MODES** window in **VM**.



Setting on (a) and off (b) the accessibility of statistics presentation mode

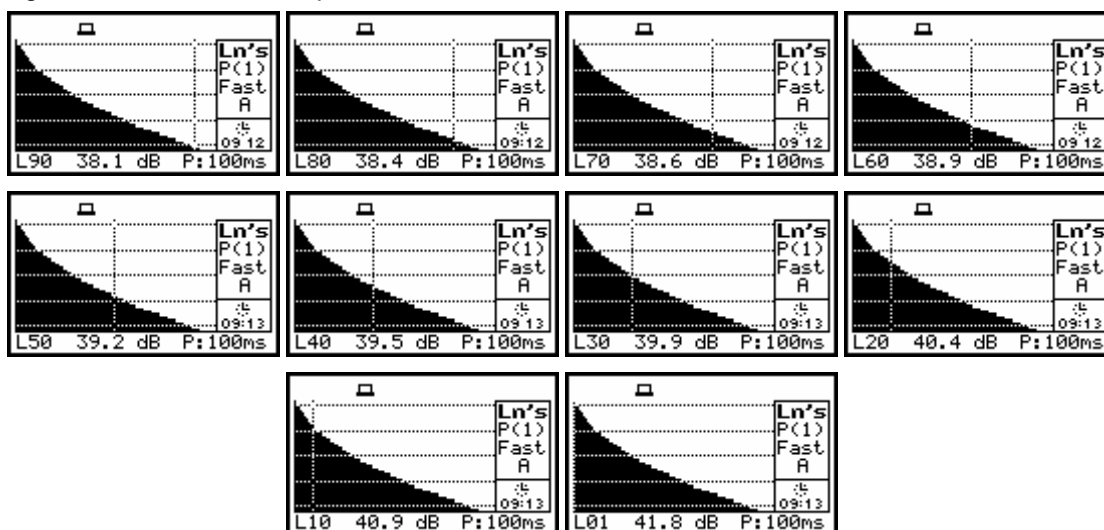
The display with the statistics analysis results presents in the graphical form the values from **L01** to **L99**. The **Lxx** level selected by the cursor is displayed in the bottom line together with its value and units (dB). The P value indicating that the statistics results are updated every 100 ms is placed at the end of the bottom line. The profile's number the statistics are taken from, the RMS detector (**Lin.**, or **Exp.**:

**Fast**, **Slow** or **Imp.**), the filter's name (**A**, **C** or **Z**) and real time are displayed on the right side of the view in the presentation modes. The selection of the profile is made by pressing the **<SHIFT>** and **<▲>** or the **<SHIFT>** and **<▼>** push-buttons. The same result can be achieved after pressing the **<ALT>** and **<◀>** or **<ALT>** and **<▶>** push-buttons.



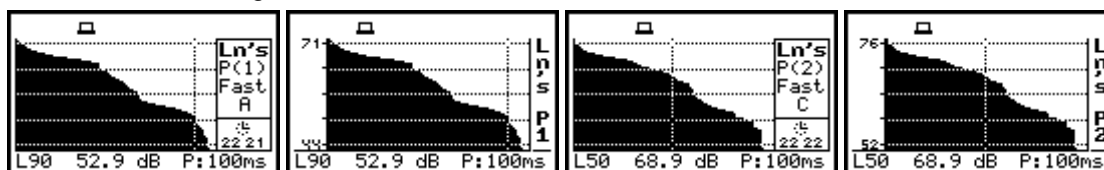
Results presented in the statistics presentation mode

The selection of the **Lxx** to be displayed is done by pressing the **<◀>**, **<▶>** push-buttons. The statistics **L01** is immediately available after pressing the **<SHIFT>** and **<◀>**, while the **L99** - after pressing the **<SHIFT>** and **<▶>** push-buttons.



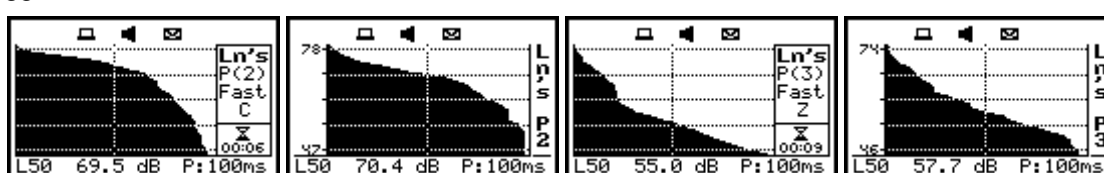
Instrument's default Lxx levels presented in the graphical form

The change of the mode is done by pressing the **<ALT>** and **<▲>** or the **<ALT>** and **<▼>** push-buttons. The second mode differs slightly from the first one described above: the description on the left side is shorter but on the right side the value of the statistic levels are shown.



Results presented in both statistic presentation modes

During the measurements, which are indicated by the **loudspeaker icon**, the current time from the range [1, **INTEGRATION PERIOD**] is displayed on the right bottom clock in the first mode. The **envelope icon** indicates that results selected in the profiles (*path: MENU / INPUT / PROFILE x*) are logged.



Results presented in both statistic presentation modes during the measurements



### 6.1.4 Setting on/off logger view - **LOGGER**

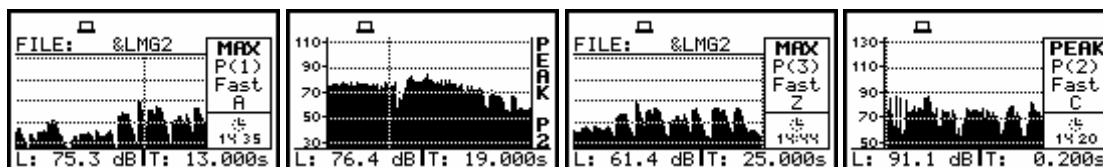
The possibility of the presentation of the measurement results, which are saved in the logger, on the instrument's display can be switched on or off placing or replacing the special character in the displayed inversely line with the **LOGGER** text by means of the <<>, <>> push-buttons. In order to confirm the selection the user has to press the <ENTER> push-button. This confirmation closes also the **DISPLAY MODES** sub-list. The sub-list can be also closed after pressing the <ESC> push-button but the settings made there are ignored.

DISPLAY MODES	
SPECTRUM	: [ ]
3 PROFILES	: [✓]
STATISTICS	: [✓]
LOGGER	: [✓]
FILE INFO	: [ ]

DISPLAY MODES	
SPECTRUM	: [ ]
3 PROFILES	: [✓]
STATISTICS	: [✓]
LOGGER	: [ ]
FILE INFO	: [ ]

Setting on and off the accessibility of **LOGGER** presentation mode

The results saved in the logger can be presented in three different modes which differ slightly each other. These modes are changed after pressing the <ALT> and <▲> or the <ALT> and <▼> push-buttons or they can be set in the **VIEW** (path: MENU / DISPLAY / DISPLAY SETUP / **LOGGER VIEW** / **VIEW**).



Exemplary displays with the measurement results saved in the logger

### 6.1.5 Setting on/off the view of the file description - **FILE INFO**

The possibility of the additional file description presented on the instrument's display can be switched on or off placing or replacing the special character in the displayed inversely line with the **FILE INFO** text by means of the <<>, <>> push-buttons. In order to confirm the selection the user has to press the <ENTER> push-button. This confirmation closes also the **DISPLAY MODES** sub-list. The sub-list can be also closed after pressing the <ESC> push-button but the settings made there are ignored.

DISPLAY MODES	
SPECTRUM	: [ ]
3 PROFILES	: [✓]
STATISTICS	: [✓]
LOGGER	: [✓]
FILE INFO	: [ ]

DISPLAY MODES	
SPECTRUM	: [ ]
3 PROFILES	: [✓]
STATISTICS	: [✓]
LOGGER	: [✓]
FILE INFO	: [✓]

Setting on and off the file description presentation mode

In the **FILE INFO** window the file name, its size, date and time of the registration of the main results (cf. App. B) and time (so-called **ELAPSED TIME**) during which the main results saved in the logger were measured. The value presented there belongs to the range [1, **INTEGRATION PERIOD**] and depends on the moment and the way the measurements were stopped.

FILE INFO	
FILE NAME:	16OCT0
FILE SIZE:	374B
DATE:	16 OCT 2006
TIME:	09:13:14
ELAPSED TIME:	00:00:01

FILE INFO	
FILE NAME:	19MAR63
FILE SIZE:	466B
DATE:	19 MAR 2007
TIME:	18:00:22
ELAPSED TIME:	00:00:01

Exemplary contents of the **FILE INFO** window

## 6.2 Setting the parameters of the graphical modes - DISPLAY SETUP

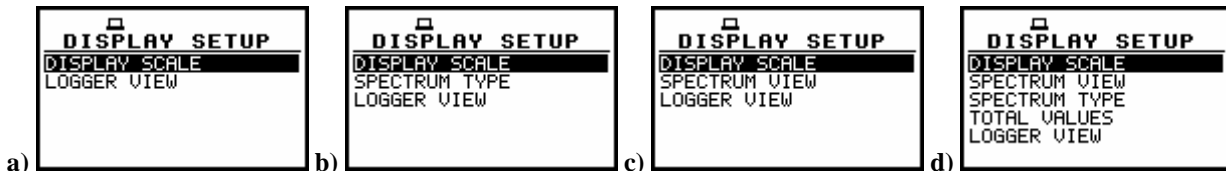
The **DISPLAY SETUP** sub-list enables the user to change several parameters of the graphical results presentations. Using the **DISPLAY SCALE** sub-list for example, one can select the scale in the available modes of graphical presentation of the measurement results (time history in the **LOGGER** and spectra in the **SPECTRUM**). Using the **TOTAL VALUES** sub-list it is possible to select the weighting filters used in the calculation of the Total values. This sub-list appears on the display only in the case of **1/1 OCTAVE** or **1/3 OCTAVE** analyser. Using the **SPECTRUM TYPE** sub-list, which appears on the display only in **VM**, it is possible to select the spectrum type which has to be presented during the vibration measurements. In order to enter the **DISPLAY SETUP** list one has to press the **<ENTER>** push-button on the inversely displayed **DISPLAY SETUP** text of the **DISPLAY** list. The **DISPLAY SETUP** sub-list is closed and the instrument returns to the **DISPLAY** after pressing the **<ESC>** push-button, which ignores any changes in the positions of the sub-list or the **<ENTER>** push-button, which confirms the changes.



**DISPLAY list with the DISPLAY SETUP selected**

### 6.2.1 Setting the scale of the presentation and the display's grid - DISPLAY SCALE

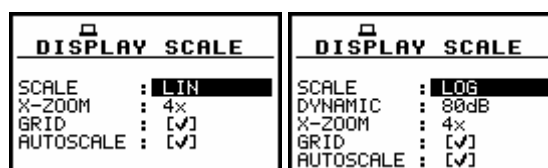
The **DISPLAY SCALE** sub-list enables the user to change the scale in the available modes of graphical presentation of the measurement results and switch on/off the grid. In order to enter this list one has to press the **<ENTER>** push-button on the inversely displayed **DISPLAY SCALE** text of the **DISPLAY SETUP** sub-list. The **DISPLAY SCALE** sub-list is closed and the instrument returns to the **DISPLAY SETUP** sub-list after pressing the **<ESC>** (the settings made there are not confirmed) or the **<ENTER>** push-button (the settings are confirmed).



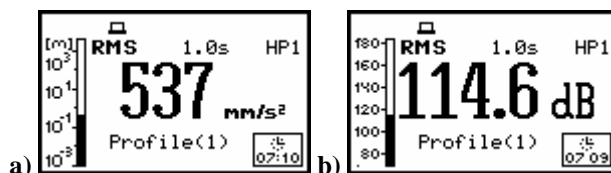
**DISPLAY SETUP windows in SLM (a), in VLM (b) in FFT (SM) (c) and in 1/1 and 1/3 OCTAVE (VM) (d)**

#### 6.2.1.1 Setting the scale of the measurement results presentation - SCALE

The **SCALE** position is accessible only in the case of vibration measurements (*path: MENU / FUNCTION / MODE / VIBR. METER*). Two options are available: **LIN** (linear) and **LOG** (logarithmic). In the case of the first one the graphical presentation and the units both are linear. In the latter case the graphical presentation is given in the logarithmic scale and the measurement results are expressed in decibels (the result is related to the values set in the **REFERENCE LEVEL** – *path: MENU / SETUP / REFERENCE LEVEL*). It is possible to set the required option using the **<<>**, **>>>** push-buttons. The confirmation of the selection is made by pressing the **<ENTER>** push-button. The return without taking into account any change is made after pressing the **<ESC>** push-button. In the case of the sound measurements the **SCALE** position is not active. All results are presented in the logarithmic scale.



### Displays with the possible options of the vibration SCALE



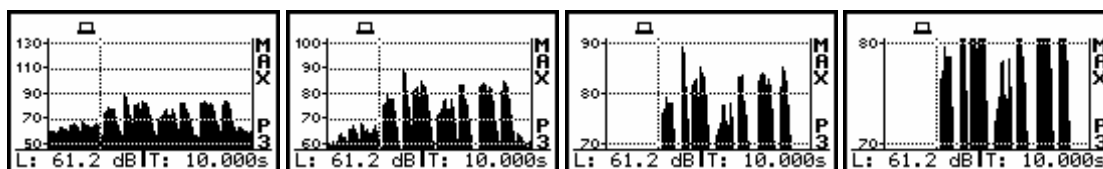
Measurement results (VM) presented in linear (a) and logarithmic (b) scale

### 6.2.1.2 Scaling the vertical axis of the graphical mode presentation - DYNAMIC

The **DYNAMIC** enables the user to select the proper scaling of the graphical mode presentation. In the case of the vertical axis one can obtain the double, four times and eight times expansion (as the default the vertical axis corresponds to 80 dB, after expansion it corresponds to 40 dB, 20 dB and 10 dB – respectively) using the <<>, <>> push-buttons and pressing the <ENTER> for the confirmation.

DISPLAY SCALE	DISPLAY SCALE	DISPLAY SCALE	DISPLAY SCALE
SCALE : LOG DYNAMIC : 80dB X-ZOOM : 1x GRID : [✓] AUTOSCALE : [✓]	SCALE : LOG DYNAMIC : 40dB X-ZOOM : 1x GRID : [✓] AUTOSCALE : [✓]	SCALE : LOG DYNAMIC : 20dB X-ZOOM : 1x GRID : [✓] AUTOSCALE : [✓]	SCALE : LOG DYNAMIC : 10dB X-ZOOM : 1x GRID : [✓] AUTOSCALE : [✓]

Displays with the possible values of the DYNAMIC parameter



Displays with the results stored in the logger presented with different DYNAMIC parameter

### 6.2.1.3 Scaling the horizontal axis of the graphical presentation - X-ZOOM

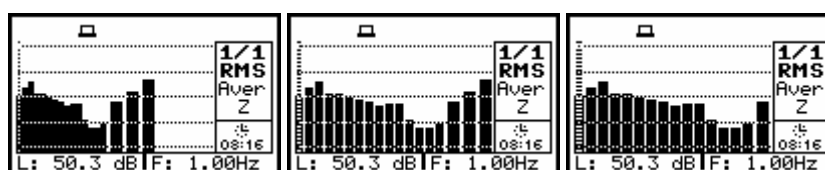
The **X-ZOOM** enables the user to change the horizontal axis in the **SPECTRUM** presentation mode by means of the <<>, <>> push-buttons. In order to confirm the selection the user has to press the <ENTER> push-button, which closes also the **DISPLAY SCALE** sub-list. The sub-list can be also closed after pressing the <ESC> push-button but the settings made there are ignored. In **1/1 OCTAVE** mode available values are **3x**, **4x** and **5x**. In **1/3 OCTAVE** mode available values are **2x**, **3x**, **4x** and **5x**.

DISPLAY SCALE	DISPLAY SCALE	DISPLAY SCALE
SCALE : LOG DYNAMIC : 80dB X-ZOOM : 1x GRID : [✓] AUTOSCALE : [✓]	SCALE : LOG DYNAMIC : 80dB X-ZOOM : 2x GRID : [✓] AUTOSCALE : [✓]	SCALE : LOG DYNAMIC : 80dB X-ZOOM : 3x GRID : [✓] AUTOSCALE : [✓]

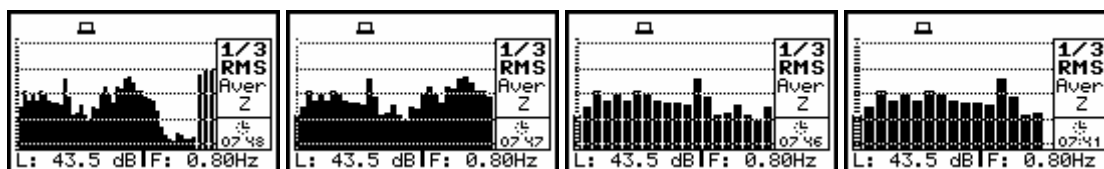
  

DISPLAY SCALE	DISPLAY SCALE
SCALE : LOG DYNAMIC : 80dB X-ZOOM : 4x GRID : [✓] AUTOSCALE : [✓]	SCALE : LOG DYNAMIC : 80dB X-ZOOM : 5x GRID : [✓] AUTOSCALE : [✓]

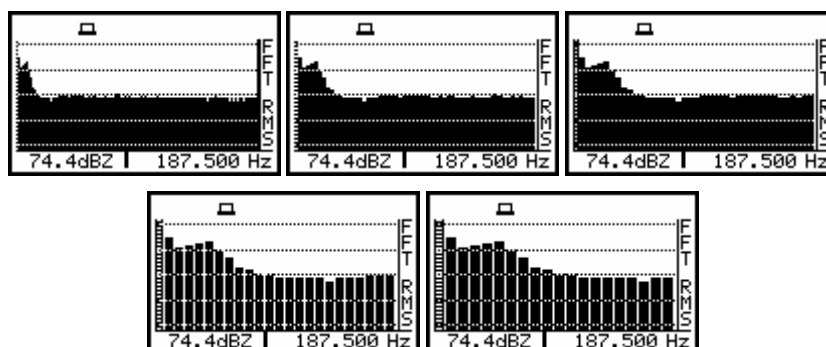
DISPLAY SCALE windows; the X-ZOOM selection



Displays in 1/1 OCTAVE SPECTRUM 3x, 4x, and 5x X-ZOOM



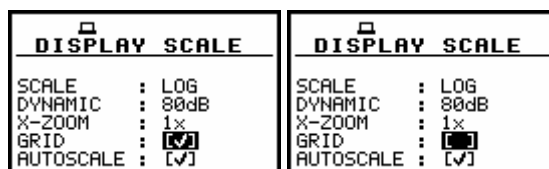
Displays in 1/3 OCTAVE SPECTRUM 2x, 3x, 4x, and 5x X-ZOOM



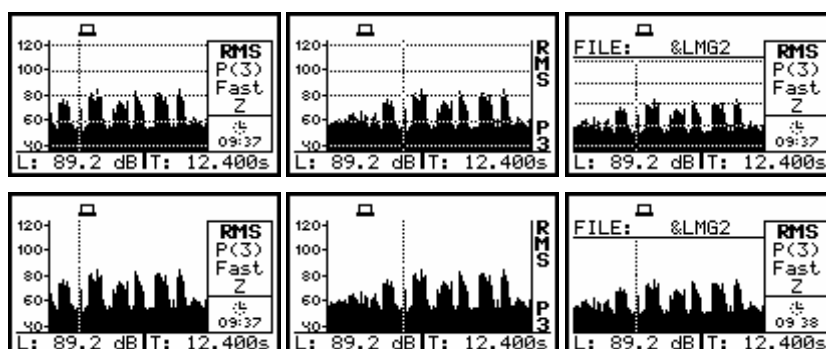
Displays in FFT SPECTRUM 1x, 2x, 3x, 4x, and 5x X-ZOOM

#### 6.2.1.4 Switching on/off the grid in the graphical mode presentation - GRID

The **GRID** enables the user to switch on or off the grid in any graphical presentation placing or replacing the special character in the displayed inversely line with the **GRID** text by means of the **<<>>**, **<>>** push-buttons. In order to confirm the selection the user has to press the **<ENTER>** push-button. This confirmation closes also the **DISPLAY SCALE** sub-list. The sub-list can be also closed after pressing the **<ESC>** push-button but the settings made there are ignored.



Displays with the grid switched on and off



Displays with the grid switched on and off

#### 6.2.1.5 Switching on/off the autoscale in the graphical mode presentation - AUTOSCALE

The **AUTOSCALE** enables the user to switch on or off the autoscaling of the plot in **1/1 OCTAVE** or **1/3 OCTAVE** spectrum presentation mode. The activation/deactivation of autoscale is made by placing or replacing the special character in the displayed inversely line with the **AUTOSCALE** text by means of the

push-buttons. In order to confirm the selection the user has to press the **<ENTER>** push-button. This confirmation closes also the **DISPLAY SCALE** sub-list. The sub-list can be also closed after pressing the **<ESC>** push-button but the settings made there are ignored.

DISPLAY SCALE		DISPLAY SCALE	
SCALE	: LOG	SCALE	: LOG
DYNAMIC	: 80dB	DYNAMIC	: 80dB
X-ZOOM	: 1x	X-ZOOM	: 1x
GRID	: [✓]	GRID	: [✓]
AUTOSCALE	: [✓]	AUTOSCALE	: [ ]

Displays with the autoscale switched on and off

## 6.2.2 Selection of the Spectrum Type in VM - SPECTRUM TYPE

The **SPECTRUM TYPE** enables the user to change the spectrum type. This sub-list contains three positions: **ACCELERATION**, **VELOCITY** and **DISPLACEMENT** and is available only in the case of the vibration measurements.

In order to enter this sub-list one has to press the **<ENTER>** push-button on the inversely displayed **SPECTRUM TYPE** text of the **DISPLAY SETUP** sub-list. The user can selected the required type of the spectrum presented on the display by means of the **<<>**, **<>>** push-buttons. The **SPECTRUM TYPE** window is closed and the instrument returns to the **DISPLAY SETUP** list after pressing the **<ESC>** push-button, which ignores any changes in the positions of the sub-list or the **<ENTER>** push-button, which confirms the changes.

DISPLAY SETUP	
DISPLAY SCALE	
<b>SPECTRUM TYPE</b>	
LOGGER VIEW	

DISPLAY SETUP window; the SPECTRUM TYPE text highlighted

SPECTRUM	SPECTRUM	SPECTRUM
<b>ACCELERATION</b>	<b>VELOCITY</b>	<b>DISPLACEMENT</b>

SPECTRUM TYPE windows with the available values

## 6.2.3 Setting the parameters of the logger files presentation - SPECTRUM VIEW

The **SPECTRUM VIEW** enables the user to change the shape of the graphical presentation (**VIEW**) and a **TYPE** parameter as well as to activate the presentation on the display the **MAX** and **MIN** spectrum.

In the **VIEW** position the **EXTENDED**, **FULL** and **NORMAL** views are available (by means of the **<<>**, **<>>** push-buttons).

In the **TYPE** position the **AVERAGED**, **INSTANTENOUS**, **MAX** and **MIN** texts are available (by means of the **<<>**, **<>>** push-buttons).

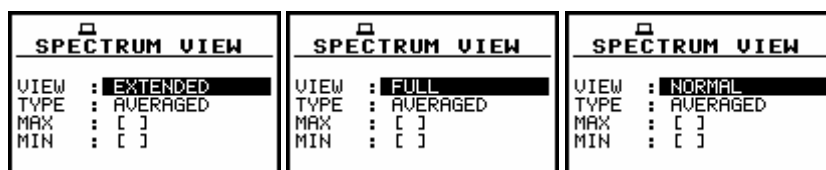
In order to enter this window one has to press the **<ENTER>** push-button on the inversely displayed **LOGGER VIEW** text of the **DISPLAY SETUP** sub-list. The **LOGGER VIEW** window is closed and the instrument returns to the **DISPLAY SETUP** sub-list after pressing the **<ESC>** (the settings made there are not confirmed) or the **<ENTER>** push-button (the settings are confirmed).



**DISPLAY SETUP** window; the **SPECTRUM VIEW** text highlighted

#### 6.2.3.1 Selection of the graphical presentation type - VIEW

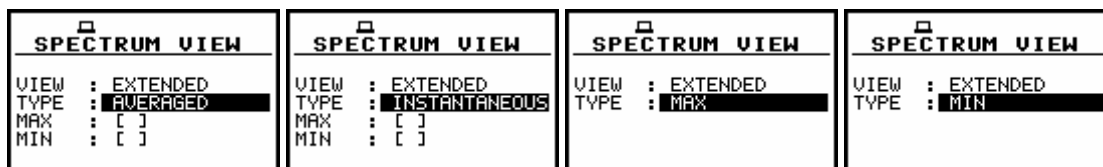
In the **VIEW** position the **EXTENDED**, **FULL** and **NORMAL** texts are available after pressing the **<<>**, **<>>** push-buttons. These texts correspond to the slightly different data presented on the display in the graphical presentation modes.



### SPECTRUM VIEW windows; the VIEW selection

#### 6.2.3.2 Selection of the spectrum type for the presentation - TYPE

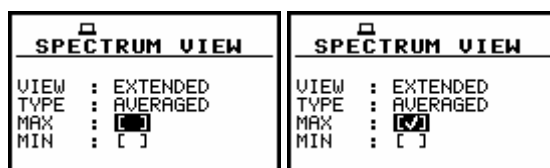
In the **TYPE** position the **AVERAGED**, **INSTANTENOUS**, **MAX** and **MIN** texts are available after pressing the << > push-buttons. Each text corresponds to the different spectrum type to be presented on the display in the graphical presentation modes.



### SPECTRUM VIEW windows; the TYPE selection

### 6.2.3.3 Selection of the MAX spectrum for the presentation – MAX

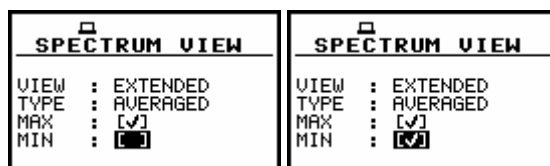
In the **MAX** position the corresponding spectrum can be selected (by means of the <<>, <>> push-buttons) to be presented on the display in the graphical presentation modes.



### SPECTRUM VIEW windows, the MAX selection

#### 6.2.3.4 Selection of the MIN spectrum for the presentation - MIN

In the **MIN** position the corresponding spectrum can be selected (by means of the <<>, <>> push-buttons) to be presented on the display in the graphical presentation modes.



## SPECTRUM VIEW windows; the MIN selection

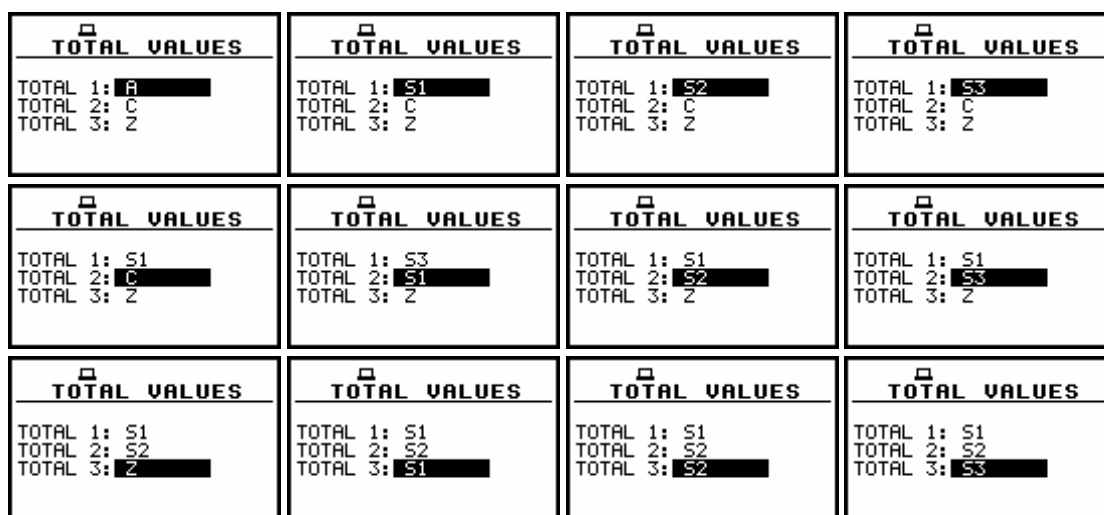
## 6.2.4 Selection of the Weighting Filters - TOTAL VALUES

The **TOTAL VALUES**, which is available only in **1/1 OCTAVE** or **1/3 OCTAVE** analysis, enables the user to select the weighting filter.

In order to enter this window one has to press the **<ENTER>** push-button on the inversely displayed **TOTAL VALUES** text of the **DISPLAY SETUP** sub-list. The **TOTAL VALUES** window is closed and the instrument returns to the **DISPLAY SETUP** sub-list after pressing the **<ESC>** (the settings made there are not confirmed) or the **<ENTER>** push-button (the settings are confirmed).

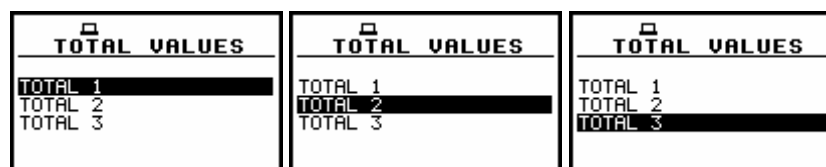


DISPLAY SETUP window; the TOTAL VALUES text highlighted



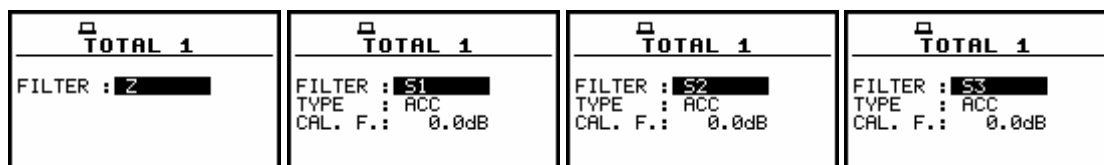
TOTAL VALUES windows; the weighting filters selection in SM

In the case of vibration mode after entering the **TOTAL VALUES** position on the display appears sub-list with the **TOTAL 1**, **TOTAL 2** and **TOTAL 3** positions. The selection of the position is made by **<<>**, **<>>** push-buttons and pressing **<ENTER>** for the confirmation.



TOTAL VALUES windows in VM; the TOTALx selected

In the **TOTALx** window for user filters (**S1**, **S2**, **S3**) selected in the **FILTER** position, the **TYPE** and **CAL. F.** positions appear on the display.



<b>TOTAL 2</b> FILTER : PR 2	<b>TOTAL 2</b> FILTER : S1 TYPE : ACC CAL. F.: 0.0dB	<b>TOTAL 2</b> FILTER : S2 TYPE : ACC CAL. F.: 0.0dB	<b>TOTAL 2</b> FILTER : S3 TYPE : ACC CAL. F.: 0.0dB
<b>TOTAL 3</b> FILTER : PR 3	<b>TOTAL 3</b> FILTER : S1 TYPE : ACC CAL. F.: 0.0dB	<b>TOTAL 3</b> FILTER : S2 TYPE : ACC CAL. F.: 0.0dB	<b>TOTAL 3</b> FILTER : S3 TYPE : ACC CAL. F.: 0.0dB

TOTAL x windows; the weighting filters selection in VM

#### 6.2.4.1 Selecting the type of the spectrum in VM to be presented - TYPE

In the **TYPE** three options are available: **ACC** (acceleration), **VEL** (velocity) and **DIL** (displacement). The selection is made by <<>, <>> push-buttons and pressing <ENTER> to confirm.

<b>TOTAL 1</b> FILTER : S1 TYPE : ACC CAL. F.: 0.0dB	<b>TOTAL 1</b> FILTER : S1 TYPE : VEL CAL. F.: 0.0dB	<b>TOTAL 1</b> FILTER : S1 TYPE : DIL CAL. F.: 0.0dB
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TOTALx windows; the TYPE selection

#### 6.2.4.2 Setting the calibration factor for the presented spectrum in VM - CAL. F.

In the **CAL. F.** the user can introduce CALIBRATION FACTOR value from -60.0 dB to 60.0 dB using <<>, <>> push-buttons with 0.1 dB step, or using <<>, <>> push-buttons with the <SHIFT> with 1 dB step. In order to confirm all changes made in this window the user has to press the <ENTER>. After pressing <ESC> the settings made there are ignored and the instrument returns to the **TOTAL VALUES** window.

<b>TOTAL 1</b> FILTER : S1 TYPE : ACC CAL. F.: -60.0dB	<b>TOTAL 1</b> FILTER : S1 TYPE : ACC CAL. F.: -5.0dB	<b>TOTAL 1</b> FILTER : S1 TYPE : ACC CAL. F.: 3.9dB
---	--	---

TOTALx windows; CALIBRATION FACTOR setting

#### 6.2.5 Setting the parameters of the logger files presentation - LOGGER VIEW

The **LOGGER VIEW** enables the user to change the shape of the graphical presentation and a **TIME** parameter. In order to enter this window one has to press the <ENTER> push-button on the inversely displayed **LOGGER VIEW** text of the **DISPLAY SETUP** sub-list. The **LOGGER VIEW** window is closed and the instrument returns to the **DISPLAY SETUP** sub-list after pressing the <ESC> (the settings made there are not confirmed) or the <ENTER> push-button (the settings are confirmed).

<b>DISPLAY SETUP</b> DISPLAY SCALE <b>LOGGER VIEW</b>	<b>DISPLAY SETUP</b> DISPLAY SCALE SPECTRUM VIEW SPECTRUM TYPE <b>LOGGER VIEW</b>
---	---

DISPLAY SETUP windows, the LOGGER VIEW text highlighted

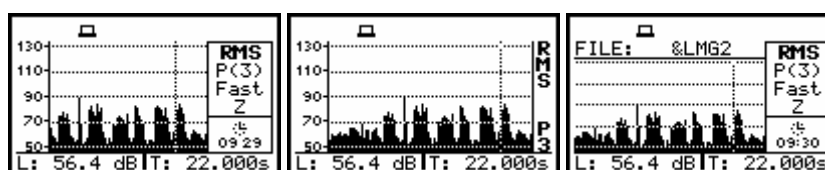


### 6.2.5.1 Selecting the shape of the graphical presentation - VIEW



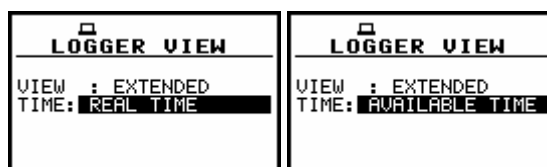
LOGGER VIEW windows with the possible values of the VIEW parameter

The **VIEW** enables the user to select the shape of the graphical mode presentation. Three different views are available which are called as **NORMAL**, **FULL** and **EXTENDED**. The selection is made by means of <<>, <>> push-buttons and pressing the <ENTER> for the confirmation. The user can achieve the same effect after pressing the <ALT> and <A> or the <ALT> and <V> push-buttons.



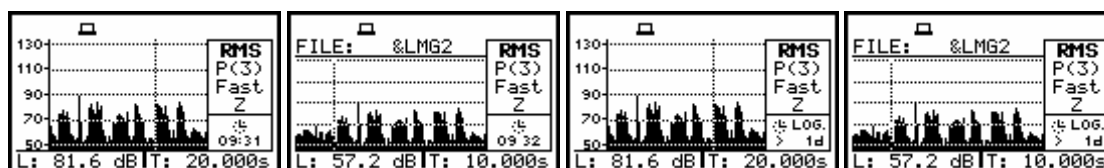
Displays with the possible values of the VIEW parameter

### 6.2.5.2 Setting the time to be presented - TIME



LOGGER VIEW windows with the possible values of the TIME parameter

The **TIME** enables the user to select the time to be presented with the logger's file results. The **REAL TIME** selection means that on the display the real time is visible, while **AVAILABLE TIME** means that time after which the logger's memory will be filled up by the current measurement result is given there. The selection is made using the <<>, <>> push-buttons and pressing the <ENTER> for the confirmation.



Displays with the possible values of the TIME parameter

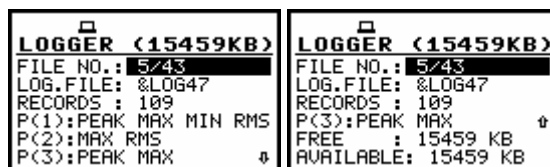
## 6.3 Selection of the logger's file to the display presentation - LOGGER VIEW

The **LOGGER** enables the user to examine the contents of the logger files. In order to open this window the user has to press the <ENTER> push-button when the **LOGGER VIEW** text is displayed inversely.

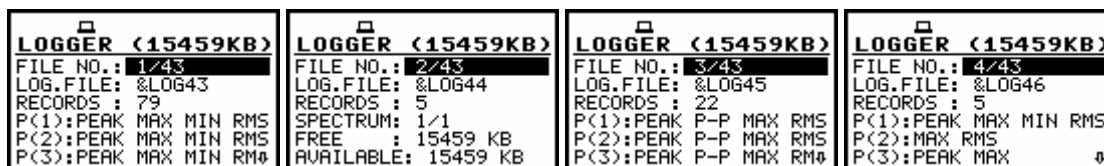
DISPLAY list; the **LOGGER VIEW** text highlighted

In the first line the available still logger's memory is displayed followed by:

- The selected number of the logger's file and the number of all saved files (**FILE NO.:**).
- The name of the logger's file (**LOG.FILE:**).
- The number of the records in the file, which name is displayed in the previous line (**RECORDS:**).
- The results saved (if any are present) in the logger from the first profile (**P(1):**).
- The results saved (if any are present) in the logger from the second profile (**P(2):**).
- The results saved (if any are present) in the logger from the third profile (**P(3):**).
- The type of spectrum (if 1/1 OCTAVE , 1/3 OCTAVE or FFT ).
- The size of the remaining free memory for logger files (**FREE:**).
- The size of the available memory for logger file (**AVAILABLE:**).

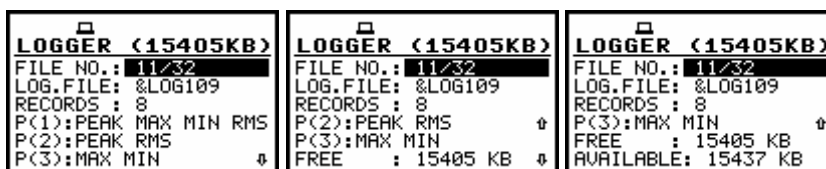
Displays in the **LOGGER VIEW** sub-list

The change of the number of the logger's file is done by pressing the <<>, <>> push-buttons.

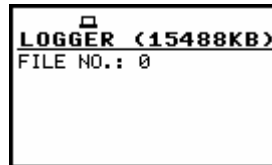
Displays in the **LOGGER VIEW** sub-list; the selection of the file to be seen

The size of the **FREE** memory for logger files is equal to the size of the **AVAILABLE** memory for logger file in the case when the logger files were not deleted from the memory. If it has happened, the **FREE** memory is always smaller than **AVAILABLE**.

In order to increase the free memory space and achieve the available one, the user has to perform the defragmentation (*path: MENU / FILE / DEFRAGMENTATION / LOGGER DEFRAGMENT.*).

Displays in the **LOGGER VIEW** sub-list; the scrolling of the file to be seen

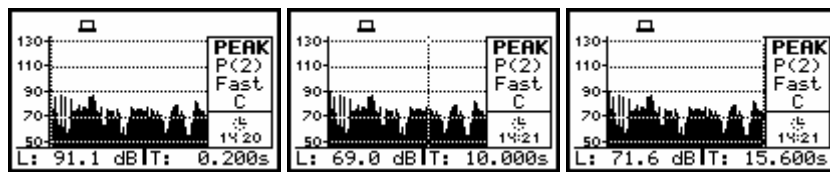
The display of the instrument after entering the **LOGGER VIEW** looks as on the figure below in the case when the logger's file does not exist (there was no measurement or the measurements were performed but with the settings **LOGGER: Off** (*path: MENU / INPUT / MEASUREMENT SETUP*)).



Display in the **LOGGER VIEW** sub-list in the case when the files do not exist

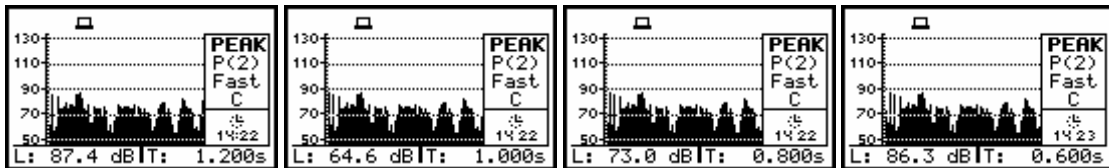
The contents of the selected logger's file is displayed after pressing the **<ENTER>** push-button. The cursor position is changed after pressing the **<◀>**, **<▶>** push-buttons. The left end of the graphical presentation is reached immediately after pressing the **<SHIFT>** and **<◀>** while the right end - after pressing the **<SHIFT>** and **<▶>** push-buttons.

The type of the registered result, the number of the profile the result is coming from, the related time from the beginning of the registration, the value with the units and the indicator of the filter are presented in the **NORMAL** and **EXTENDED** logger's view mode on the right side of the display.



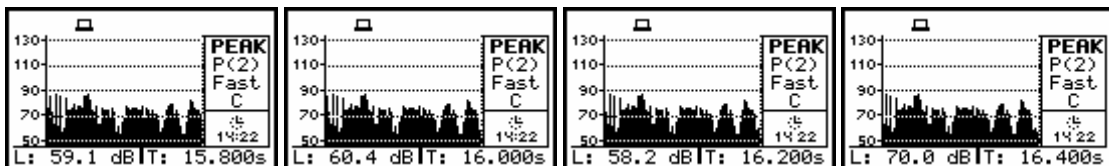
Displays with the selected logger's file; the change of the cursor position

The scrolling of the display to the right is made when the cursor is at the left end of the graphical presentation space and the **<◀>** push-button is still pressed and in the file there are still the results.



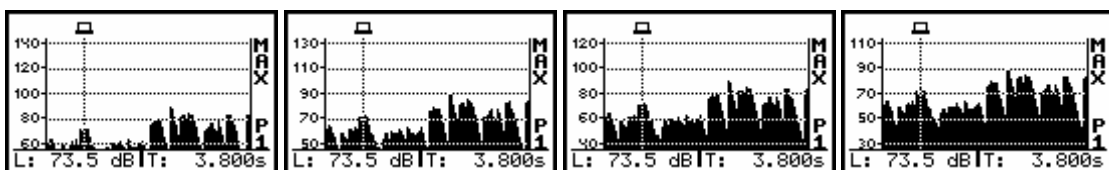
Displays with the selected logger's file; the scrolling to the right

The scrolling of the display to the left is made when the cursor is at the right end of the graphical presentation space and the **<▶>** push-button is still pressed and in the file there are still the results.



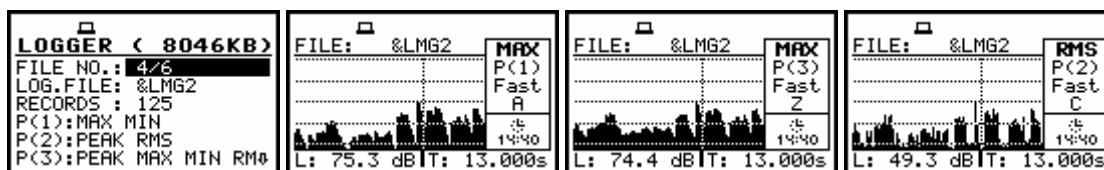
Displays with the selected logger's file; the scrolling to the left

The position of the horizontal axis in relation to the vertical one can be changed after pressing the **<▲>**, **<▼>** push-buttons together with the **<SHIFT>** one.



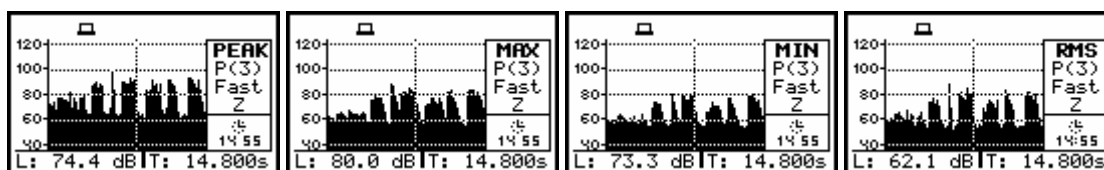
Displays with the selected logger's file; the change of the axis relation

The results from logger's file, coming from different profiles, are changed after pressing the **<▲>** or **<▼>** push-buttons – after each pressing the result from the next profile is displayed.



Displays with the selected logger's file; the change of the profile

The results from logger's file, coming from the same profile, are displayed after each pressing of the **<ALT>** and **<◀>** or **<ALT>** and **<▶>** push-buttons.



Displays with the selected logger's file; the change of the result from a profile

## 6.4 Setting the parameters of the display - SCREEN SETUP

The **SCREEN SETUP** window enables the user to set the proper contrast of the display and switch on the backlight's automatic switch off after a certain period (30 seconds). In order to enter the window one has to press the **<ENTER>** push-button on the inversely displayed **SCREEN SETUP** text of the **DISPLAY** list. The **SCREEN SETUP** window is closed and the instrument returns to the **DISPLAY** list after pressing the **<ESC>** or the **<ENTER>** push-button.



DISPLAY list; the SCREEN SETUP text highlighted

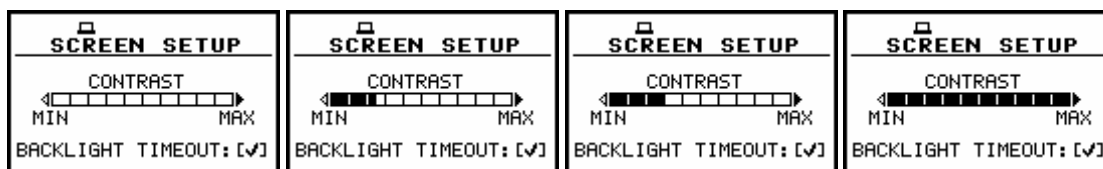
### 6.4.1 Setting the contrast of the display - CONTRAST

The **CONTRAST** enables the user to set the proper contrast of the display (by means of the **<◀>**, **<▶>** push-buttons). The position is opened after pressing the **<ENTER>** push-button on the highlighted (displayed inversely) **CONTRAST** text. The user can select 21 different values of this parameter.



**Notice:** The new value of the contrast is confirmed after each pressing of the **<◀>** or **<▶>** push-buttons (new value is selected without any confirmation from the **<ENTER>** push-button).

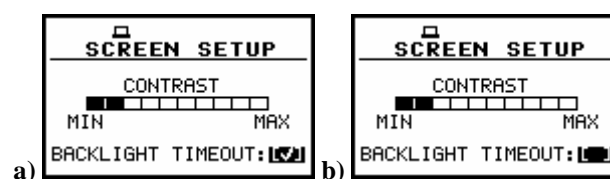
The window is closed and the instrument returns to the **DISPLAY** list after pressing the **<ESC>** or **<ENTER>** push-button.



SCREEN SETUP windows; the change of the contrast

#### 6.4.2 Automatic switch off of the backlight - BACKLIGHT TIMEOUT

Taking into account the saving of the internal source of the instrument's power the backlight should be used relatively rare. It is possible to set the backlight's automatic switch off. In the case when this option is set, after 30 seconds from pressing **any push-button** the backlight is switched off. If it happened, the first pressing of any push-button would cause the switch on of the backlight. The confirmation of the selection is made by pressing the **<ENTER>** push-button. The return without taking into account any change is made after pressing the **<ESC>** push-button.



SCREEN SETUP windows; the BACKLIGHT TIMEOUT active (a), and not active (b)

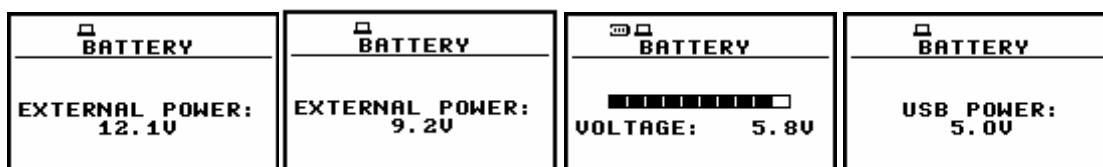
#### 6.5 Checking the state of the internal battery - BATTERY

The **BATTERY** enables the user to check the internal battery condition. In order to enter the window one has to press the **<ENTER>** push-button on the inversely displayed **BATTERY** text of the **DISPLAY** list. The **BATTERY** window is closed and the instrument returns to the **DISPLAY** list after pressing the **<ESC>** or the **<ENTER>** push-button.



DISPLAY window with BATTERY text highlighted

The instrument can be powered from the external power supplier, from the external battery pack, from four AA standard or AA rechargeable batteries or from the USB interface when its USB Device socket is connected by means of the cable to a PC. The view presented on the display in each case is different. The current battery voltage is displayed together with its approximate state (in the graphical form).



BATTERY windows for different sources powering the instrument

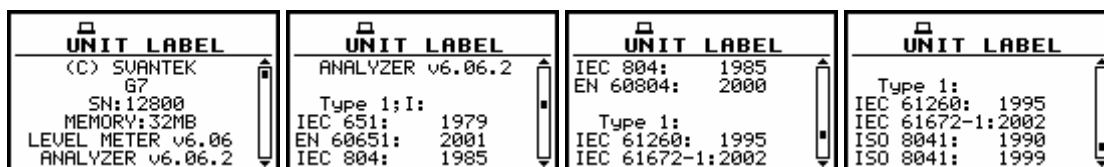
#### 6.6 Checking specification of the instrument - UNIT LABEL

The **UNIT LABEL** enables the user to check **the type of the instrument, its serial number, the current software versions installed in it** and the standards, which the instrument fulfils. In order to enter the list one has to press the **<ENTER>** push-button on the inversely displayed **UNIT LABEL** text of the **DISPLAY** list. The **UNIT LABEL** sub-list is closed and the instrument returns to the **DISPLAY** list after pressing the **<ESC>** or the **<ENTER>** push-button.



**DISPLAY list; the UNIT LABEL text highlighted**

After pressing the **<<>**, **<>>** (or **<▲>**, **<▼>**) push-buttons the displayed text is scrolled on the display and the user can check the number of the standard fulfilled by the instrument and the current software version number. The window is closed and the instrument returns to the **DISPLAY** list after pressing the **<ESC>** or **<ENTER>** push-button.



**UNIT LABEL windows opened and after scrolling with the <▲>, <▼> push-buttons**



**Notice:** The contents of the **UNIT LABEL** should be always transmitted to the Svantek's service in the case of any problems faced by the user during the instrument's operation.

## 7 SAVING THE MEASUREMENT RESULTS - FILE

The registration of the measurement results is an essential task for the efficient use of the instrument. All available measurement results can be stored in the FLASH type memory of the instrument or on the USB memory stick.

There are two main ways for storing the measurement data in the instrument:

1. **Save files containing the main results and setup settings using the FILE list.**
2. **Save data in the logger's file.**



**Notice:** *The instrument's logger memory is independent from the results and setup memory. The capacity of the available memory is equal to 32 MB and is divided between logger (16 252 428 bytes) and results and setup settings (15 859 224 bytes).*



**Notice:** *All of the options (except **DEFRAGMENTATION**) from the **FILE** list can be used for the USB memory stick.*

### **Saving files**

In the case of the G7 instrument there are files containing data:

- from **Sound LEVEL METER**;
- from **Vibration LEVEL METER**;
- from **1/1 OCTAVE** analysis;
- from **1/3 OCTAVE** mode;
- from **DOSE METER** mode;
- from **FFT** analysis;
- from **RT60** mode;
- stored in the instrument's logger (accessible in the **DISPLAY / LOGGER VIEW** window).



**Notice:** *The logger files are created automatically (the usage of the **SAVE** is not required).*

Each file consists of some elements, which are the same for all kind of files:

- a file header;
- the unit and software specification;
- the user's text stored together with the measurement data;
- the parameters and global settings;
- the special settings for profiles;
- the marker of the end of the file.

The other elements of the file structure depend on the type of the file (**SLM**, **VLM**, **1/1 OCTAVE**, **1/3 OCTAVE**, **DOSE METER**, **FFT**, **RT60**, logger) and on the setting of **SAVE STAT.** (path: **MENU / FILE / SAVE OPTIONS / SAVE STAT.**). These elements are as follows:

- the main results;
- the results coming from **1/1 OCTAVE** analysis;
- the results coming from **1/3 OCTAVE** analysis;
- the results coming from **DOSE METER** mode;
- the header of the **FFT** analysis performed in the selected band;

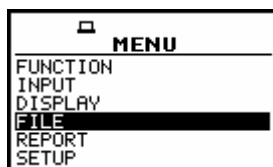
- the **FFT** analysis results;
- the results coming from **RT60** mode;
- the statistics header;
- the results of statistical analysis;
- the header of the statistical analysis performed in **1/1 OCTAVE** or **1/3 OCTAVE** analysis;
- the results of the statistical analysis performed in **1/1 OCTAVE** or **1/3 OCTAVE** analysis;
- the header of the file from the logger;
- the data stored during the measurements in the logger's file.



**Notice:** The detailed description of all types of file structures is given in the Appendix B.

Storing the sound measurement results as files in the instrument's FLASH DISC can be done by means of the **FILE** list. In order to open, the **FILE** list the user has to:

- press the **<MENU>** push-button,
- select from the main list, using the **<▲>**, **<▼>** or **<<>**, **<>>** push-buttons, the **FILE** text (highlight it inversely),
- press the **<ENTER>** push-button.



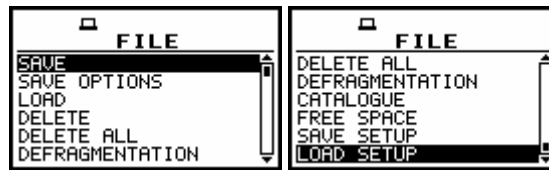
**Main list; the FILE text highlighted (displayed inversely)**

The **FILE** list contains the following items:

<b>SAVE</b>	enables one to save the measurement results as a file in the instrument's memory;
<b>SAVE OPTIONS</b>	enables one to set the options of the measurement result savings;
<b>LOAD</b>	enables one to load to the working space of the instrument's memory the measurement results saved in a file;
<b>DELETE</b>	enables one to delete a selected file from the instrument's memory;
<b>DELETE ALL</b>	enables one to delete all files from the instrument's memory;
<b>DEFRAGMENTATION</b>	enables one to consolidate the flash memory after deleting some files from it;
<b>CATALOGUE</b>	enables one to overview the catalogue of the files saved in the instrument's memory;
<b>FREE SPACE</b>	informs the user about the capacity of the instrument's memory still available for storing the measurement results;
<b>SAVE SETUP</b>	enables one to save the setup as a file in the instrument memory;
<b>LOAD SETUP</b>	enables one to load to the working space of the instrument's memory the selected setup saved in a file;
<b>DIRECTORY</b>	this position appears only in case when external USB memory stick is connected to the instrument; it informs the user about connected memory stick, the free space on USB memory stick, number of directory, the number of files, enables also to edit the name of the directory;
<b>COPY FILES TO USB</b>	this position appears only in when the external USB memory stick is connected to the instrument; it enables to copy files from the internal memory of the instrument to the connected USB memory stick;
<b>MOVE FILES TO USB</b>	this position appears only in case when USB memory stick is connected to the instrument; it enables the user to move files from the internal memory of the instrument to the connected USB memory stick.



Pressing the **<SHIFT>** and **<▲>** (or **<SHIFT>** and **<◀>**) results in a movement to the first position of the opened list and pressing the **<SHIFT>** and **<▼>** (or **<SHIFT>** and **<▶>**) results in a movement to the last position of the opened list.

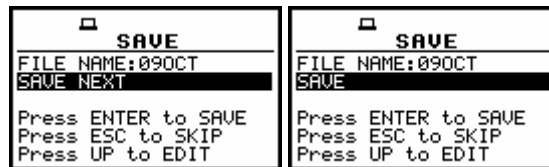


FILE list of the instrument

In each available position any change is performed by means of the **<◀>**, **<▶>** push-buttons. In order to confirm the selection the **<ENTER>** push-button has to be pressed. After this confirmation, the opened window or list is closed. In order to ignore any changes made in the opened window or list the user has to press the **<ESC>** push-button.

## 7.1 Saving files in the instrument's memory - SAVE and SAVE NEXT

The **SAVE** is used for storing data in the internal non-volatile (FLASH DISC) memory (files are always written at the beginning of a free continuous space) as a file (see Appendix B for the file formats). In order to enter the window the user has to select the **SAVE** text in the **FILE** list, using the **<▲>** (or **<◀>**) push-button and press the **<ENTER>** push-button. There are two available functions: the **SAVE NEXT** – save a file with the name increased by one, and **SAVE** – save a file with the edited name. These functions are available after pressing the **<◀>**, **<▶>** push-buttons.



SAVE window in the FILE list

The name of the file, in which the measurements results are to be saved, is displayed above the **SAVE** or **SAVE NEXT** text. The default name for a file is displayed in the case of the first entering to this position (after power on). The default name consists of the day and the month's abbreviation. The line of the file's name edition (**FILE NAME**) is opened after pressing the **<▲>** push-button.

The user can skip the file's name edition and start saving file pressing the **<ENTER>** push-button or return to the **FILE** list pressing the **<ESC>** one.

The edition process is presented on the Figure below. The displayed inversely character is currently edited. The **<◀>**, **<▶>**, **<◀>**, **<▶>** and **<SHIFT>** push-buttons are used for editing the name which cannot exceed eight characters.



Display during the process of setting the character in the edited name

One can select the position of the character in the edited text using the **<◀>**, **<▶>** push-buttons.

<b>SAVE</b> FILE NAME: 280CT0 SAVE Press ENTER to SAVE Press ESC to SKIP SH<:Delete SH>:Insert	<b>SAVE</b> FILE NAME: 280CT0 SAVE Press ENTER to SAVE Press ESC to SKIP SH<:Delete SH>:Insert	<b>SAVE</b> FILE NAME: 280CT0 SAVE Press ENTER to SAVE Press ESC to SKIP SH<:Delete SH>:Insert	<b>SAVE</b> FILE NAME: 280CT0 SAVE Press ENTER to SAVE Press ESC to SKIP SH<:Delete SH>:Insert
---	---	---	---

Display during the selection of the character's position to be edited

The available ASCII characters can be changed using the <▲> (or <▼>) push-button pressed together with the <SHIFT> one. The subsequent digits, underline, big letters and space appear on the display in the inversely displayed position after each pressing of the mentioned above push-buttons.

<b>SAVE</b> FILE NAME: 280CT0 SAVE Press ENTER to SAVE Press ESC to SKIP SH<:Delete SH>:Insert	<b>SAVE</b> FILE NAME: 280CT0 SAVE Press ENTER to SAVE Press ESC to SKIP SH<:Delete SH>:Insert	<b>SAVE</b> FILE NAME: 280CT0 SAVE Press ENTER to SAVE Press ESC to SKIP SH<:Delete SH>:Insert	<b>SAVE</b> FILE NAME: 280CT0 SAVE Press ENTER to SAVE Press ESC to SKIP SH<:Delete SH>:Insert
<b>SAVE</b> FILE NAME: 280CT0 SAVE Press ENTER to SAVE Press ESC to SKIP SH<:Delete SH>:Insert	<b>SAVE</b> FILE NAME: 280CT0 SAVE Press ENTER to SAVE Press ESC to SKIP SH<:Delete SH>:Insert	<b>SAVE</b> FILE NAME: 280CT0 SAVE Press ENTER to SAVE Press ESC to SKIP SH<:Delete SH>:Insert	<b>SAVE</b> FILE NAME: 280CT0 SAVE Press ENTER to SAVE Press ESC to SKIP SH<:Delete SH>:Insert

<b>SAVE</b> FILE NAME: 280CT0 SAVE Press ENTER to SAVE Press ESC to SKIP SH<:Delete SH>:Insert	<b>SAVE</b> FILE NAME: 280CT0 SAVE Press ENTER to SAVE Press ESC to SKIP SH<:Delete SH>:Insert	<b>SAVE</b> FILE NAME: 280CT0 SAVE Press ENTER to SAVE Press ESC to SKIP SH<:Delete SH>:Insert	<b>SAVE</b> FILE NAME: 280CT0 SAVE Press ENTER to SAVE Press ESC to SKIP SH<:Delete SH>:Insert
---	---	---	---

Display during the selection of the character

<b>SAVE</b> FILE NAME: 280CT0 SAVE Press ENTER to SAVE Press ESC to SKIP SH<:Delete SH>:Insert	<b>SAVE</b> FILE NAME: 280CT0 SAVE Press ENTER to SAVE Press ESC to SKIP SH<:Delete SH>:Insert	<b>SAVE</b> FILE NAME: 280CT0 SAVE Press ENTER to SAVE Press ESC to SKIP SH<:Delete SH>:Insert	<b>SAVE</b> FILE NAME: 280CT0 SAVE Press ENTER to SAVE Press ESC to SKIP SH<:Delete SH>:Insert
---	---	---	---

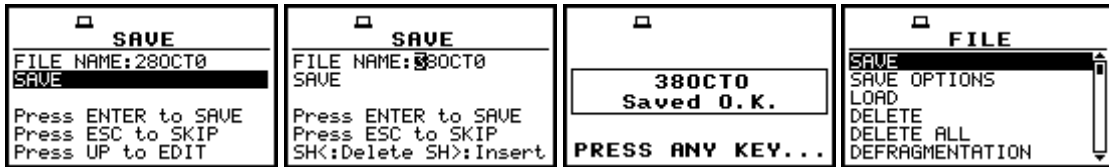
FILE NAME edition after pressing the &lt;SHIFT&gt; and &lt;&gt;&gt; push-buttons

<b>SAVE</b> FILE NAME: 280 C SAVE Press ENTER to SAVE Press ESC to SKIP SH<:Delete SH>:Insert	<b>SAVE</b> FILE NAME: 280 C SAVE Press ENTER to SAVE Press ESC to SKIP SH<:Delete SH>:Insert	<b>SAVE</b> FILE NAME: 280 C SAVE Press ENTER to SAVE Press ESC to SKIP SH<:Delete SH>:Insert	<b>SAVE</b> FILE NAME: 280 C SAVE Press ENTER to SAVE Press ESC to SKIP SH<:Delete SH>:Insert
--	--	--	--

FILE NAME edition after pressing the &lt;SHIFT&gt; and &lt;&lt;&gt; push-buttons

The edited name is accepted and the file is saved after pressing the <ENTER> push-button. The special warning is displayed in the case the file with the edited name already exists in the memory. The instrument waits then for a reaction of the user (any push-button should be pressed except the <SHIFT> or the <ALT> one).

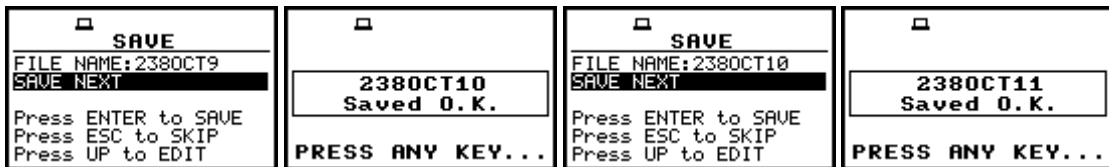
<b>SAVE</b> FILE NAME: 280CT0 SAVE Press ENTER to SAVE Press ESC to SKIP SH<:Delete SH>:Insert	<b>280CT0</b> .. is used! PRESS ANY KEY...	<b>FILE</b> SAVE SAVE OPTIONS LOAD DELETE DELETE ALL DEFRAGMENTATION
---	--	--



Displays during the attempt of overwriting the existing file, changing the name and saving data

All changes introduced to the file name during the edition are ignored after pressing the **<ESC>** push-button. This pressing causes the return to the list from which the **SAVE** option was entered. The return after the edition to the line with the **SAVE** or **SAVE NEXT** text is possible after pressing the **<V>** push-button.

The simplified edition consists in the addition at the end of the file name the natural number. The increase by one of the number is made automatically. After the execution of the saving operation the new file name is displayed and the instrument waits then for a reaction of the user (any push-button should be pressed except the **<SHIFT>** or the **<ALT>** one). In the next attempt of saving data, the new name is displayed in the **FILE NAME** line and that name is increased by one during the saving operation.

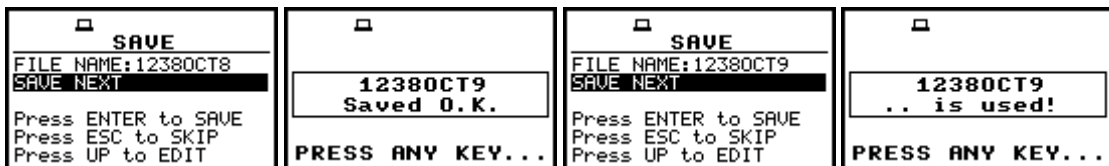


Displays in the simplified edition of the file name and the execution of the saving operation

The number can be changed from 0 to N. The only limitation of the N value is the length of the file name, which cannot be longer than eight characters. In the case, when such limitation is achieved and the instrument can not change automatically the file's name the only possibility is to edit new file name.

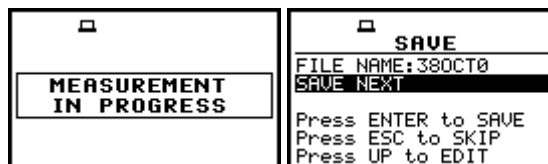


**Notice:** The files can be overwritten (the use of the same file name) **without any warning** if the **REPLACE** option is switched on (path: MENU / FILE / SAVE OPTIONS / REPLACE).



Displays in the simplified edition of the file name, saving and the “saturation” of that operation

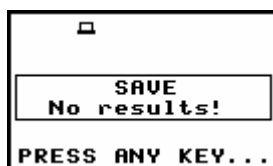
As it was already written, the instrument attempts to save a file after pressing the **<ENTER>** push-button. The saving is not possible in the case when the instrument is measuring the signal. The special message is displayed for about 3 seconds in this case and the instrument returns to the **SAVE** window.



Displays after the attempt to perform unavailable saving operation and the return to the **SAVE NEXT**

The presented below message is displayed after trying to execute the save operation in the case when no measurements were performed and there are no results to be saved. The instrument then waits

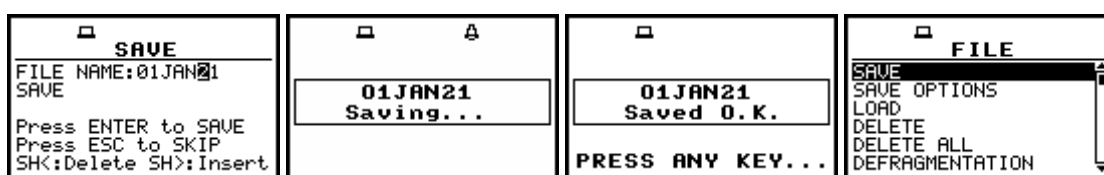
for the reaction of the user (any push-button should be pressed except the **<SHIFT>** or the **<ALT>** one) and after pressing a push-button it returns to the **SAVE** window.



Display after the SAVE operation when there were no results for storing

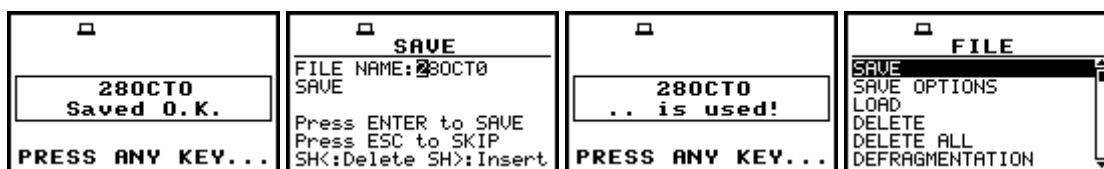


**Notice:** During the execution of the **SAVE** or **SAVE NEXT** function an additional window is displayed informing about the operation performed. In the case of short files, this window can be unnoticed by the user.



View of all displays during and after the execution of the SAVE operation

As it was already written, it is not possible to store the data in the file, which already exists, when the **REPLACE** is not active ([ ]) (path: MENU / FILE / SAVE OPTIONS / REPLACE). The presented below sequence of displays illustrates the situation when during the name edition process the user selected the name, which was used before. The instrument displays a special message and waits for the reaction of the user (any push-button should be pressed except the **<SHIFT>** or the **<ALT>** one) and after pressing a push-button it returns to the **FILE** list.



Displays after the attempt to overwrite a file if the REPLACE is not active



**Notice:** The direct access to the **SAVE** / **SAVE NEXT** function is possible after pressing simultaneously the **<ENTER>** and **<ALT>** push-buttons if the **DIRECT SAVE** option is switched off (path: MENU / FILE / SAVE OPTIONS / DIRECT SAVE). In another case, (**DIRECT SAVE** option is switched on) the results are saved, after pressing these push-buttons, in the file with the automatically incremented name.



**Notice:** After the usage of the **<ENTER>** and **<ALT>** push-buttons (if the **DIRECT SAVE** option is switched on) the measurement results are saved only once. The following pressing will not cause any instrument's reaction unless next measurement is performed. The same result can be saved in the multiply number of files only using the **SAVE** / **SAVE NEXT** function.

Finally, let us present some examples showing the occupation of the result files memory and the logger files memory after the execution of the saving operation.

**Example 1.** Let us assume the settings presented below where one measurement is performed with the integration period equal to 10 seconds, nothing is saved in the logger and the statistics are not stored. The measurement results are saved in the file named @EXAMP1.

MEASUR. SETUP	SAVE OPTIONS	FILE NAME	FILE INFO
START DELAY : 1s INTEGR. PERIOD : 10s REP. CYCLE : 1 LOGGER : Off	RAM FILE : [ ] REPLACE : [ ] SAVE STATISTICS : [ ] AUTO SAVE : [✓] DIRECT SAVE : [ ] SAVE MAX SPECT. : [ ]	@EXAMP1  SH<:Delete SH>:Insert =>	FILE NAME: @EXAMP1 FILE SIZE: 466B DATE: 23 MAR 2007 TIME: 16:25:18 ELAPSED TIME:00:00:10

Settings and the FILE INFO after the performed measurements

The size of the file is equal to 466 bytes and it is visible in the **FILE INFO** window. The detailed description of the level-meter file structure is given in App. B. The @EXAMP1 file saved in the result files memory decreases the amount of the **FREE SPACE** and **TOTAL AVAILABLE** memory by the value of the file size (466 bytes) plus 4 bytes containing the addresses of the previous file and 4 bytes containing the address of the next file (all together 474 bytes). The size of the logger files memory (the **LOGGER FREE SPACE** and **LOGGER AVAILABLE**) is not changed as the **LOGGER** (path: MENU / INPUT / MEASUREMENT SETUP) was not activated.

FREE SPACE	FREE SPACE	FREE SPACE	FREE SPACE
FILES FREE SPACE: 15868098 bytes TOTAL AVAILABLE: 15868098 bytes LOGGER FREE SPACE: 2243346 bytes	TOTAL AVAILABLE: 15868098 bytes LOGGER FREE SPACE: 2243346 bytes LOGGER AVAILABLE: 2243346 bytes	FILES FREE SPACE: 15867624 bytes TOTAL AVAILABLE: 15867624 bytes LOGGER FREE SPACE: 2243346 bytes	TOTAL AVAILABLE: 15867624 bytes LOGGER FREE SPACE: 2243346 bytes LOGGER AVAILABLE: 2243346 bytes

FREE SPACE window before and after saving the @EXAMP1 file

**Example 2.** Let us assume the settings presented below where one measurement is performed with the integration period equal to 10 seconds, nothing is saved in the logger but this time the statistics are also stored. The measurement results are saved in the file named @EXAMP2.

MEASUR. SETUP	SAVE OPTIONS	FILE NAME	FILE INFO
START DELAY : 1s INTEGR. PERIOD : 10s REP. CYCLE : 1 LOGGER : Off	RAM FILE : [ ] REPLACE : [ ] SAVE STATISTICS : [✓] AUTO SAVE : [✓] DIRECT SAVE : [ ] SAVE MAX SPECT. : [ ]	@EXAMP2  SH<:Delete SH>:Insert =>	FILE NAME: @EXAMP2 FILE SIZE: 1946B DATE: 23 MAR 2007 TIME: 16:55:26 ELAPSED TIME:00:00:10

Settings and the FILE INFO after the performed measurements

The size of the file is now equal to 1946 bytes and it is visible in the **FILE INFO** window. The detailed description of the level-meter file structure is given in App. B. The @EXAMP2 file saved in the result files memory decreases the amount of the **FREE SPACE** and **TOTAL AVAILABLE** memory by the value of the file size (1946 bytes) plus 4 bytes containing the addresses of the previous file and 4 bytes containing the address of the next file (all together 1954 bytes). The size of the logger files memory (the **LOGGER FREE SPACE** and **LOGGER AVAILABLE**) is not changed as the **LOGGER** (path: MENU / INPUT / MEASUREMENT SETUP) was not activated.

FREE SPACE	FREE SPACE	FREE SPACE	FREE SPACE
FILES FREE SPACE: 15867624 bytes TOTAL AVAILABLE: 15867624 bytes LOGGER FREE SPACE: 2243346 bytes	TOTAL AVAILABLE: 15867624 bytes LOGGER FREE SPACE: 2243346 bytes LOGGER AVAILABLE: 2243346 bytes	FILES FREE SPACE: 15865670 bytes TOTAL AVAILABLE: 15865670 bytes LOGGER FREE SPACE: 2243346 bytes	TOTAL AVAILABLE: 15865670 bytes LOGGER FREE SPACE: 2243346 bytes LOGGER AVAILABLE: 2243346 bytes

FREE SPACE window before and after saving the @EXAMP2 file

**Example 3.** Let us assume the settings presented below where one measurement is performed with the integration period equal to 10 seconds, the statistics are not saved but this time the **LOGGER** is activated (**On**). The measurement results are saved in the file named @EXAMP3.

SAVE OPTIONS	MEASUR. SETUP	FILE NAME
RAM FILE : [ ]	START DELAY : 1s	@EXAMP3
REPLACE : [ ]	INTEGR. PERIOD : 10s	
SAVE STATISTICS: [ ]	REP. CYCLE : 1	
AUTO SAVE : [✓]	LOGGER : On	
DIRECT SAVE : [ ]	LOGGER STEP: 100ms	
CONFIRM. : [ ]	LOGGER NAME: &LOG100	SH<:Delete SH>:Insert

Settings before the execution of the measurements

All together eight different results coming from **PROFILE 1 (PEAK, MAX, MIN and RMS)**, **PROFILE 2 (PEAK and RMS)** and **PROFILE 3 (MAX and MIN)** (path: MENU / INPUT / PROFILE x) are saved every 100 milliseconds. Therefore, during 10 seconds integration period it gives  $10 \times 10 = 100$  **RECORDS** (path: MENU / DISPLAY / LOGGER VIEW), each containing eight values (each two-bytes long). All results are saved in the logger's file named &LOG100. The exact size of the &LOG100 is not displayed, only the approximate value (2 kilobytes) can be visible in the logger files delete window (path: MENU / FILE / DELETE / LOGGER FILES).

PROFILE(1)	PROFILE(2)	PROFILE(3)	LOGGER (15481KB)
FILTER : A	FILTER : C	FILTER : Z	FILE NO.: 5/5
DETECTOR: FAST	DETECTOR: FAST	DETECTOR: FAST	LOG.FILE: &LOG100
LOGGER PEAK : [✓]	LOGGER PEAK : [✓]	LOGGER PEAK : [ ]	RECORDS : 100
LOGGER MAX : [✓]	LOGGER MAX : [ ]	LOGGER MAX : [✓]	P(1):PEAK MAX MIN RMS
LOGGER MIN : [✓]	LOGGER MIN : [ ]	LOGGER MIN : [✓]	P(2):PEAK RMS
LOGGER RMS : [✓]	LOGGER RMS : [✓]	LOGGER RMS : [ ]	P(3):MAX MIN

Settings for the current measurements

FILE INFO	FILE INFO	LOGGER (15481KB)
FILE NAME: @EXAMP3	FILE NAME: @EXAMP3	FILE NO.: 5/5
	FILE SIZE: 466B	LOG.FILE: &LOG100
	DATE: 26 MAR 2007	RECORDS : 100
	TIME: 14:50:50	P(1):PEAK MAX MIN RMS
	ELAPSED TIME:00:00:10	P(2):PEAK RMS
		P(3):MAX MIN

FILE INFO during and after the measurements

The size of the file is equal to 466 bytes and it is visible in the **FILE INFO** window. The detailed description of the level-meter file structure is given in App. B. The @EXAMP3 file saved in the result files memory decreases the amount of the **FREE SPACE** and **TOTAL AVAILABLE** memory by the value of the file size (466 bytes) plus 4 bytes containing the addresses of the previous file and 4 bytes containing the address of the next file (all together 474 bytes). The size of the logger files memory (the **LOGGER FREE SPACE** and **LOGGER AVAILABLE**) is also decreased by the value of 2064 bytes (8 bytes for the addresses, 1682 bytes for the selected results from the profiles and 374 bytes for the additional information described in details in App. B).

FREE SPACE	FREE SPACE	FREE SPACE	FREE SPACE
FILES FREE SPACE: 15872358 bytes	TOTAL AVAILABLE: 15872358 bytes	FILES FREE SPACE: 15871884 bytes	TOTAL AVAILABLE: 15871884 bytes
TOTAL AVAILABLE: 15872358 bytes	LOGGER FREE SPACE: 15854388 bytes	TOTAL AVAILABLE: 15871884 bytes	LOGGER FREE SPACE: 15852324 bytes
LOGGER FREE SPACE: 15854388 bytes	LOGGER AVAILABLE: 15854388 bytes	LOGGER FREE SPACE: 15871884 bytes	LOGGER AVAILABLE: 15852324 bytes

FREE SPACE window before and after saving the @EXAMP3 and &LOG100 files

**Example 4.** Let us assume the settings presented below where one measurement is performed with the integration period equal to 10 seconds, the statistics are saved and the **LOGGER** is activated (**On**). The measurement results are saved in the file named @EXAMP4.

SAVE OPTIONS		MEASUR. SETUP		FILE NAME	
RAM FILE	: [ ]	START DELAY	: 1s	@EXAMP4	
REPLACE	: [ ]	INTEGR. PERIOD	: 10s		
SAVE STATISTICS	: [✓]	REP. CYCLE	: 1		
AUTO SAVE	: [✓]	LOGGER	: On		
DIRECT SAVE	: [ ]	LOGGER STEP	: 100ms		
CONFIRM.	: [ ]	LOGGER NAME	: &LOG101	SH<:Delete SH>:Insert	

Settings before the execution of the measurements

All together eight different results coming from **PROFILE 1 (PEAK, MAX, MIN and RMS)**, **PROFILE 2 (PEAK and RMS)** and **PROFILE 3 (MAX and MIN)** (path: MENU / INPUT / PROFILE x) are saved every 100 milliseconds. Therefore, during 10 seconds integration period it gives  $10 \times 10 = 100$  **RECORDS** (path: MENU / DISPLAY / LOGGER VIEW), each containing eight values (each two-bytes long). All results are saved in the logger's file named &LOG101. The exact size of the &LOG101 is not displayed, only the approximate value (2 kilobytes) can be visible in the logger files delete window (path: MENU / FILE / DELETE / LOGGER FILES).

PROFILE(1)		PROFILE(2)		PROFILE(3)		LOGGER (15479KB)	
FILTER	: A	FILTER	: C	FILTER	: Z	FILE NO.	: 6/6
DETECTOR	: FAST	DETECTOR	: FAST	DETECTOR	: FAST	LOG.FILE	: &LOG101
LOGGER PEAK	: [✓]	LOGGER PEAK	: [✓]	LOGGER PEAK	: [ ]	RECORDS	: 100
LOGGER MAX	: [✓]	LOGGER MAX	: [ ]	LOGGER MAX	: [✓]	P(1):PEAK MAX MIN RMS	
LOGGER MIN	: [✓]	LOGGER MIN	: [ ]	LOGGER MIN	: [✓]	P(2):PEAK RMS	
LOGGER RMS	: [✓]	LOGGER RMS	: [✓]	LOGGER RMS	: [ ]	P(3):MAX MIN	

FILE INFO		FILE INFO		DELETE	
FILE NAME: @EXAMP4		FILE NAME: @EXAMP4	FILE SIZE: 1946B	FILE NO. : 6/6	
		DATE: 26 MAR 2007	TIME: 15:10:44	LOG.FILE: &LOG101	
		ELAPSED TIME: 00:00:10		LOG.SIZE: 2 KB	
				P(1):PEAK MAX MIN RMS	
				P(2):PEAK RMS	
				P(3):MAX MIN	

Settings and the FILE INFO during and after the measurements

The size of the file is equal to 1946 bytes and it is visible in the **FILE INFO** window. The detailed description of the level-meter file structure is given in App. B. The @EXAMP1 file saved in the result files memory decreases the amount of the **FILES FREE SPACE** and **TOTAL AVAILABLE** memory by the value of the file size (1946 bytes) plus 4 bytes containing the addresses of the previous file and 4 bytes containing the address of the next file (all together 1954 bytes). The size of the logger files memory (the **LOGGER FREE SPACE** and **LOGGER AVAILABLE**) is also decreased by the value of 2064 bytes (8 bytes for the addresses, 1682 bytes for the selected results from the profiles and 374 bytes for the additional information described in details in App. B).

FREE SPACE		FREE SPACE		FREE SPACE		FREE SPACE	
FILES FREE SPACE:	15871884 bytes	TOTAL AVAILABLE:	15871884 bytes	FILES FREE SPACE:	15869930 bytes	TOTAL AVAILABLE:	15869930 bytes
TOTAL AVAILABLE:	15871884 bytes	LOGGER FREE SPACE:	15852324 bytes	TOTAL AVAILABLE:	15869930 bytes	LOGGER FREE SPACE:	15850260 bytes
LOGGER FREE SPACE:	15852324 bytes	LOGGER AVAILABLE:	15852324 bytes	LOGGER FREE SPACE:	15850260 bytes	LOGGER AVAILABLE:	15850260 bytes

FREE SPACE window before and after saving the @EXAMP4 and &amp;LOG100 files

All four result files: @EXAMP1, @EXAMP2, @EXAMP3 and @EXAMP4 and two logger files: &LOG100 and &LOG101 described in the examples, are visible in the **CATALOGUE** window (path: MENU / FILE / CATALOGUE).

## 7.2 Controlling the data storing in the instrument's memory - SAVE OPTIONS

The **SAVE OPTIONS** sub-list is used for the selection of the options of data storing in the **FLASH DISC** memory of the instrument. The sub-list is opened after pressing the <ENTER> push-button when the **SAVE OPTIONS** text in the **FILE** list is displayed inversely (selected using the <▲>, <▼>).

(or <◀>, <▶>) push-buttons). The return to the **FILE** list is possible after pressing the <ESC> push-button.



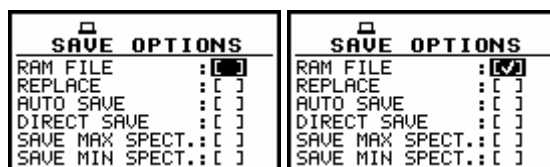
**FILE** list with the **SAVE OPTIONS** text highlighted (displayed inversely)

It is possible to write data into the same part of the memory starting all the time with the same address (**RAM FILE**), to replace the existing in the memory file by the new with the same name (**REPLACE**), to add to the results the statistics of the measurements (**SAVE STAT.**), to save automatically the results of the measurements (**AUTO SAVE**). The position of the sub-list is changed after pressing the <▲>, <▼> push-buttons. In order to confirm the selection the <ENTER> push-button has to be pressed. Such pressing closes also the opened sub-list.

### 7.2.1 Saving data starting from the same address - RAM FILE

The measurement data usually are saved in the different files in the flash memory of the instrument. There is also possibility to save data in RAM file starting from the same address. It means that each time the data are saved the previous file is overwritten. This option is useful for the permanent monitoring and remote reading data from the instrument by means of any available interface with the proper period. In order to read data saved in a RAM file one has to use #4,3 function described in details in App. A.

The **RAM FILE** is switched on after placing the special character ([√]) in the inversely displayed position in the line with the **RAM FILE** text. The activation or deactivation of the **RAM FILE** is done by pressing the <◀>, <▶> push-buttons.



**SAVE OPTIONS** sub-list; the selection of the **RAM FILE**

After pressing the <ENTER> push-button the selections made in any position of the sub-list (in particular also in the **RAM FILE**) are confirmed and the sub-list is closed. In the case when the **AUTO SAVE** was active ([√]), after pressing the <ENTER> push-button the **FILE NAME** window is opened for editing the names for the **AUTO SAVE** files. The **SAVE OPTION** is closed ignoring all settings made in it after pressing the <ESC> push-button.

The **RAM FILE** functionality is available only in the **LEVEL METER**, **1/1 OCTAVE** and **1/3 OCTAVE** mode. In the **DOSE METER**, **FFT**, **RT60**, modes the line with the **RAM FILE** text does not appear on the display after entering the **SAVE OPTIONS** sub-list.

### 7.2.2 Replacement of the existing files by the new ones - REPLACE

The result of the attempt to save the file with the name, which already exists in the memory, depends on the setting of the **REPLACE**. It is possible to erase the old file and to save the new one with the same name if the position is active ([√]). The activation or deactivation of the **REPLACE** is done by pressing the <◀>, <▶> push-buttons.



SAVE OPTIONS	
RAM FILE	: [ ]
REPLACE	: [✓]
AUTO SAVE	: [ ]
DIRECT SAVE	: [ ]
SAVE MAX SPECT.	: [ ]
SAVE MIN SPECT.	: [ ]

SAVE OPTIONS sub-list; the selection of the REPLACE

SAVE OPTIONS	
REPLACE	: [✓]
SAVE STATISTICS	: [ ]
AUTO SAVE	: [ ]
DIRECT SAVE	: [ ]
SAVE MAX SPECT.	: [ ]
SAVE MIN SPECT.	: [ ]

SAVE OPTIONS window without RAM FILE position; the selection of the REPLACE

The message is displayed that such operation is not available in the case when this position is not active ([ ]) – cf. the description of the **SAVE**. In the other case, the existing file is overwritten.

12380CT9	
.. is used!	
PRESS ANY KEY...	

Displays during the file saving when the REPLACE is switched off and on

After pressing the **<ENTER>** push-button the selections made in any position of the sub-list (in particular also in the **REPLACE**) are confirmed and the sub-list is closed. In the case when the **AUTO SAVE** was active ([✓]), after pressing the **<ENTER>** push-button the **FILE NAME** window is opened for editing the names for the **AUTO SAVE** files. The **SAVE OPTION** sub-list is closed ignoring all settings made in it after pressing the **<ESC>** push-button.

### 7.2.3 Controlling the measurement statistics savings - SAVE STATISTICS

The **SAVE STATISTICS** is used to set self saving, together with the measurement results, the statistics of the measurements ([✓]) or to switch off ([ ]) this possibility. Together with the measurements 100-class statistics are calculated (the values named from **L01** to **L99**). The activation or deactivation of the **SAVE STATISTICS** is done by pressing the **<<>**, **<>>** push-buttons.



**Notice:** This position was created to save the memory of the instrument in the case when the knowledge of the statistics is not necessary. **Each registration of the statistics requires 600 bytes of the memory! Ten selected statistic levels are always saved with the main results.**

SAVE OPTIONS	
RAM FILE	: [ ]
REPLACE	: [ ]
SAVE STATISTICS	: [✓]
AUTO SAVE	: [ ]
DIRECT SAVE	: [ ]
SAVE MAX SPECT.	: [ ]

SAVE OPTIONS sub-list; the selection of the SAVE STATISTICS

SAVE OPTIONS		SAVE OPTIONS	
REPLACE	: [ ]	REPLACE	: [ ]
SAVE STATISTICS	: [✓]	SAVE STATISTICS	: [✓]
AUTO SAVE	: [ ]	AUTO SAVE	: [ ]
DIRECT SAVE	: [ ]	DIRECT SAVE	: [ ]
SAVE MAX SPECT.	: [ ]	SAVE MAX SPECT.	: [ ]
SAVE MIN SPECT.	: [ ]	SAVE MIN SPECT.	: [ ]

SAVE OPTIONS window without RAM FILE position; the selection of the SAVE STATISTICS

After pressing the **<ENTER>** push-button the selections made in any position of the sub-list (in particular also in the **SAVE STAT.**) are confirmed and the sub-list is closed. In the case when the **AUTO SAVE** was active ([✓]), after pressing the **<ENTER>** push-button the **FILE NAME** window is opened for editing the names for the **AUTO SAVE** files. The **SAVE OPTION** sub-list is closed ignoring all settings made in it after pressing the **<ESC>** push-button.

## 7.2.4 Controlling the measurement results savings - AUTO SAVE

Using the **AUTO SAVE** one can set the self-saving of the measurement results ([✓]) or to switch off ([ ]) this possibility. The activation or deactivation of the **AUTO SAVE** is done by pressing the **<<>**, **<>>** push-buttons. This position was also established in order not to waist too much memory of the instruments when the self-saving is not necessary.

SAVE OPTIONS		SAVE OPTIONS	
RAM FILE	: [ ]	RAM FILE	: [ ]
REPLACE	: [ ]	REPLACE	: [ ]
SAVE STATISTICS	: [ ]	SAVE STATISTICS	: [ ]
AUTO SAVE	: [✓]	AUTO SAVE	: [✓]
DIRECT SAVE	: [ ]	DIRECT SAVE	: [ ]
SAVE MAX SPECT.	: [ ]	SAVE MAX SPECT.	: [ ]

SAVE OPTIONS sub-list; the selection of the AUTO SAVE



**Notice:** The **AUTO SAVE** function can be performed only in the case when the **INTEGR. PERIOD** (path: MENU / INPUT / MEASUREMENT SETUP) is not less than 10 seconds. If it is less than 10 seconds, the measurement results are not saved without any indication of that fact! There is only one exception - when the **REP. CYCLE** (path: MENU / INPUT / MEASUREMENT SETUP) is equal to one, the **AUTO SAVE** function is executed disregarding the value of the integration period.

SAVE OPTIONS		SAVE OPTIONS	
RAM FILE	: [ ]	RAM FILE	: [ ]
REPLACE	: [ ]	REPLACE	: [ ]
SAVE STATISTICS	: [ ]	SAVE STATISTICS	: [ ]
AUTO SAVE	: [✓]	AUTO SAVE	: [✓]
DIRECT SAVE	: [ ]	DIRECT SAVE	: [ ]
SAVE MAX SPECT.	: [ ]	SAVE MAX SPECT.	: [ ]

SAVE OPTIONS sub-list; the selection of the AUTO SAVE in DOSE METER

The **FILE NAME** window is opened after switching on the **AUTO SAVE** function and pressing the **<ENTER>** push-button. After pressing the **<ESC>** push-button the **FILE NAME** window is closed and the instrument returns to the **SAVE OPTION**, but with the **AUTO SAVE** function switched off.

SAVE OPTIONS		FILE NAME	SAVE OPTIONS	
RAM FILE	: [ ]	press	RAM FILE	: [ ]
REPLACE	: [ ]		REPLACE	: [ ]
SAVE STATISTICS	: [ ]		SAVE STATISTICS	: [ ]
AUTO SAVE	: [✓]		AUTO SAVE	: [✓]
DIRECT SAVE	: [ ]		DIRECT SAVE	: [ ]
SAVE MAX SPECT.	: [ ]	SH<:Delete SH>:Insert	SAVE MAX SPECT.	: [ ]

Displays during the execution of the AUTO SAVE switching on; the FILE NAME skipping and return to the SAVE OPTION sub-list

When the integration period is too short for switching on the **AUTO SAVE** option the following message appears on the display:



Display after attempt of switching on **AUTO SAVE** option with too short **INT. PERIOD**

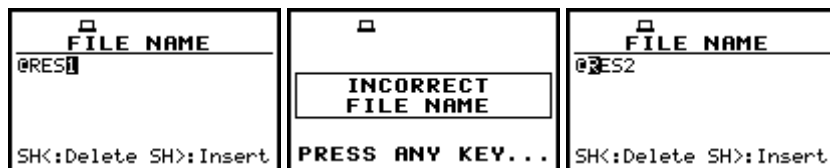
The **FILE NAME** window is closed after pressing the **<ENTER>** push-button with the confirmation of the **AUTO SAVE** function switched on and the user interface returns to the **FILE** list.



Displays during the execution of the **AUTO SAVE** switching on; the **FILE NAME** confirmation and return to the **FILE** list

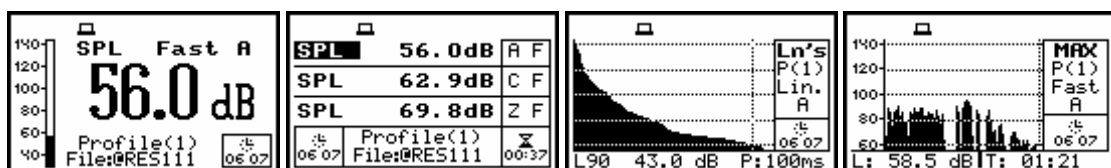
The edition of the file name in the **FILE NAME** window is performed almost in the same way as it was described in the case of the **SAVE / SAVE NEXT** function. The displayed inversely character is currently edited. The **<<>**, **<>>**, **<^>**, **<v>** and **<SHIFT>** push-buttons are used for editing the name which cannot exceed eight characters including the starting special character @ which cannot be edited. One can select the proper position of the character in the edited text using the **<<>**, **<>>** push-buttons. The available ASCII characters can be changed using the **<^>** (or **<v>**) push-button pressed together with the **<SHIFT>** one. Additionally, the character can be also changed using the **<^>** (or **<v>**) push-button (this functionality is not available in the **SAVE / SAVE NEXT** function). The subsequent digits, underline, big letters and space appear on the display in the inversely displayed position after each pressing of the mentioned above push-buttons.

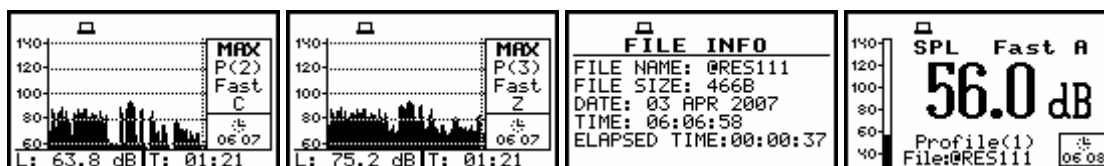
The edition is finished after pressing the **<ENTER>** push-button. The edited name is compared with the file names existing in the catalogue. In the case when the file with the same name already exists, the special message is displayed and after pressing any character except the **<SHIFT>** or **<ALT>** one, the instrument returns once more to the **FILE NAME** window.



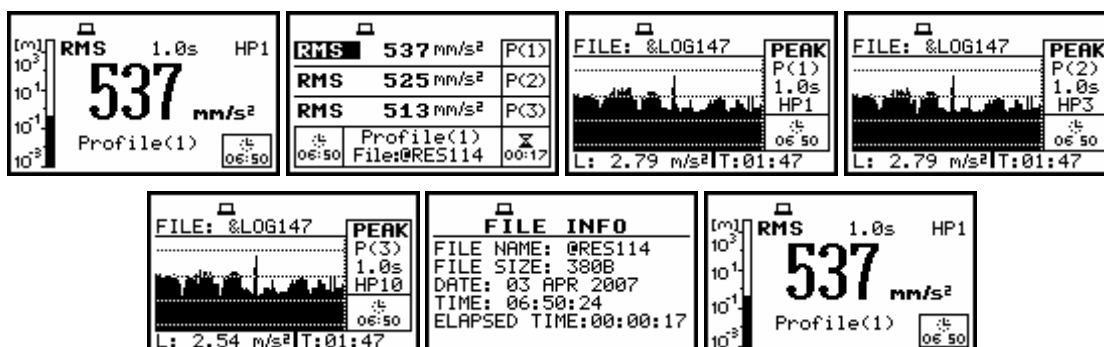
Displays after the incorrect file name edition

When the **AUTO SAVE** option is active (**[√]**), after starting the measurements by pressing the **<START/STOP>** push-button the results are saved in the file with the selected name. Depending on the instrument's mode and selected options the sequence of the displays available after each pressing of the **<^>** or **<v>** could be as presented below.



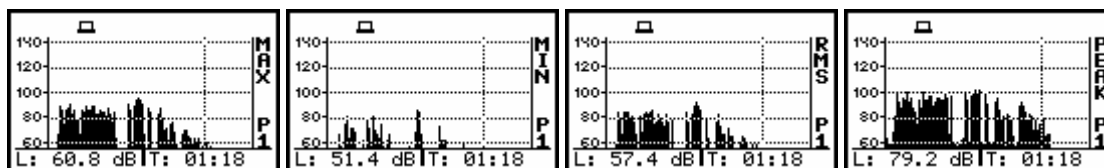


Measurement results (SM) presented after pressing the &lt;▲&gt; or &lt;▼&gt; push-buttons

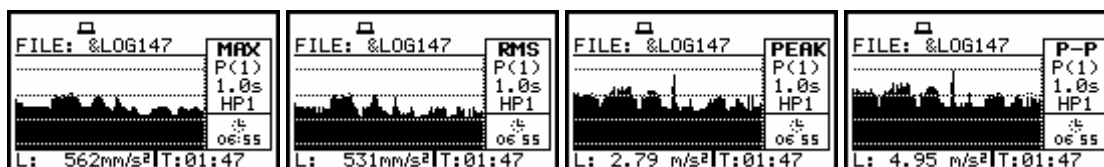


Measurement results (VM) presented after pressing the &lt;▲&gt; or &lt;▼&gt; push-buttons

In the case when from a profile more than one result was saved in the logger's file, the other results are presented after pressing the <◀>, <▶> push-buttons together with the <ALT> one.

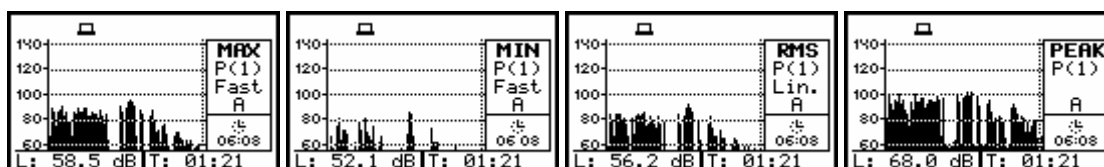


Results saved from a profile presented after pressing the &lt;◀&gt; or &lt;▶&gt; and &lt;ALT&gt; push-buttons



Results saved from a profile presented after pressing the &lt;◀&gt; or &lt;▶&gt; and &lt;ALT&gt; push-buttons

After pressing the <▲> or <▼> and <ALT> push-buttons the **VIEW** is changed (*path: MENU / DISPLAY / DISPLAY SETUP / LOGGER VIEW / VIEW*). So, after pressing these push-buttons and then repeating the previous sequence (the <◀>, <▶> push-buttons together with the <ALT> one) the user can observe the displays presented below.



Results saved from a profile presented after pressing the &lt;◀&gt; or &lt;▶&gt; and &lt;ALT&gt; push-buttons

Another measurement is started after next pressing of the <START/STOP> push-button. The measurement is stopped after the selected **INTEGR. PERIOD** (*path: MENU / INPUT / MEASUREMENT SETUP / INTEGR. PERIOD*) names of the next saved files are automatically

incremented by one. The same remarks are valid in this case as it was already stated in the description of the **SAVE NEXT** function.

### 7.2.5 Direct access to the SAVE / SAVE NEXT function - DIRECT SAVE

The **DIRECT SAVE** enables one to select the instrument's reaction on the simultaneous pressing of the **<ENTER>** and **<ALT>** push-buttons. If this option is not active (☐) , after pressing these push-buttons the **SAVE** window is accessed (if the measurements are not performed). If the option is active (☒) , after pressing the **<ENTER>** and **<ALT>** push-buttons the results are saved in the file with the automatically incremented name and the proper message is displayed for a few seconds. The proper setting of the **DIRECT SAVE** is done by pressing the **<◀>**, **<▶>** push-buttons.

SAVE OPTIONS	
RAM FILE	: <input type="checkbox"/>
REPLACE	: <input type="checkbox"/>
SAVE STATISTICS	: <input type="checkbox"/>
AUTO SAVE	: <input type="checkbox"/>
DIRECT SAVE	: <input checked="" type="checkbox"/>
SAVE MAX SPECT.	: <input type="checkbox"/>

SAVE OPTIONS sub-list; the selection of the DIRECT SAVE

SAVE OPTIONS	
REPLACE	: <input type="checkbox"/>
SAVE STATISTICS	: <input type="checkbox"/>
AUTO SAVE	: <input type="checkbox"/>
DIRECT SAVE	: <input checked="" type="checkbox"/>
SAVE MAX SPECT.	: <input type="checkbox"/>
SAVE MIN SPECT.	: <input type="checkbox"/>

SAVE OPTIONS window without RAM FILE position; the selection of the DIRECT SAVE

After pressing the **<ENTER>** push-button the selections made in any position of the sub-list (in particular also in the **DIRECT SAVE**) are confirmed and the sub-list is closed. In the case when the **AUTO SAVE** was active (☒) , after pressing the **<ENTER>** push-button the **FILE NAME** window is opened for editing the names for the **AUTO SAVE** files. The **SAVE OPTION** sub-list is closed ignoring all settings made in it after pressing the **<ESC>** push-button.

During the execution of the measurements pressing the **<ENTER>** and **<ALT>** push-buttons causes, disregarding the option set in the **DIRECT SAVE**, that the message presented below is displayed.

MEASUREMENT IN PROGRESS	
----------------------------	--

Display after the attempt to perform an unavailable operation during measurement in progress

The presented below displays illustrates the difference in the user interface execution after pressing the **<ENTER>** and **<ALT>** push-buttons in the case when the measurements are not performed and the **DIRECT SAVE** is not active (☐) and active (☒) .

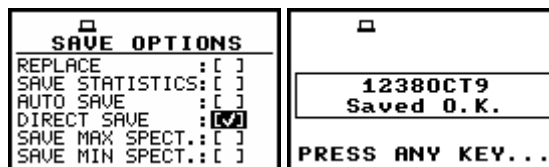
SAVE OPTIONS	
REPLACE	: <input type="checkbox"/>
SAVE STATISTICS	: <input type="checkbox"/>
AUTO SAVE	: <input type="checkbox"/>
DIRECT SAVE	: <input checked="" type="checkbox"/>
SAVE MAX SPECT.	: <input type="checkbox"/>
SAVE MIN SPECT.	: <input type="checkbox"/>

SAVE	
FILE NAME:1238OCT8	
SAVE NEXT	
Press ENTER to SAVE	
Press ESC to SKIP	
Press UP to EDIT	

=> <ENTER> =>

1238OCT9 Saved O.K.	
PRESS ANY KEY...	

Exemplary executions of the software with the DIRECT SAVE not active

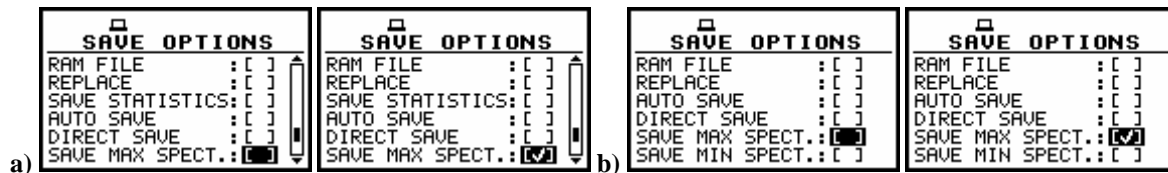


Exemplary executions of the software with the DIRECT SAVE active

### 7.2.6 Saving maximum values in the spectrum - SAVE MAX SPECT.

The **SAVE MAX SPECT.** enables the user to save the highest values of the **INSTANTENEOUS** spectra (calculated with 100-milliseconds time step) in **1/1 OCTAVE** or **1/3 OCTAVE** analysis, which occurred during the **INTEGR. PERIOD** set in the **INPUT** list (path: **MENU / INPUT / MEASUREMENT SETUP / INTEGR. PERIOD**).

The activation or deactivation of the **SAVE MAX SPECT.** is done by pressing the **<<>**, **<>>** push-buttons. After pressing the **<ENTER>** push-button the activation is confirmed. The **SAVE OPTION** sub-list is closed ignoring all settings made in it after pressing the **<ESC>** push-button.



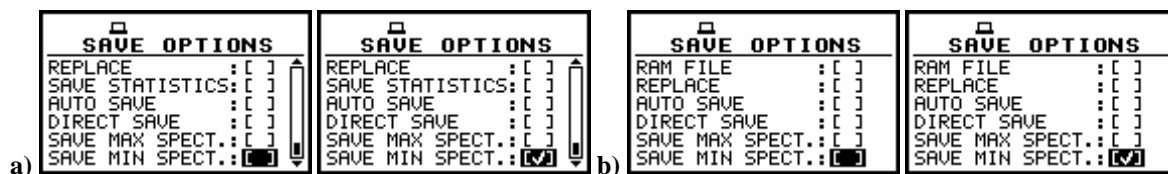
SAVE OPTIONS sub-list; the selection of the SAVE MAX SPECT. in SM (a) and in VM (b)

To see the **MAX** values on the display during the the real time **1/1 OCTAVE** or **1/3 OCTAVE** analysis measurement the user has to activate the option in the **DISPLAY** list (path: **MENU / DISPLAY / DISPLAY SETUP / SPECTRUM VIEW / MAX** or path: **MENU / DISPLAY / DISPLAY MODES / SPECTRUM**).

### 7.2.7 Saving the lowest values in the spectrum - SAVE MIN SPECT.

The **SAVE MIN SPECT.** enables the user to save the lowest values of the **INSTANTENEOUS** spectra (calculated with 100-milliseconds time step) in **1/1 OCTAVE** or **1/3 OCTAVE** analysis, which occurred during the **INTEGR. PERIOD** set in the **INPUT** list (path: **MENU / INPUT / MEASUREMENT SETUP / INTEGR. PERIOD**).

The activation or deactivation of the **SAVE MIN SPECT.** is done by pressing the **<<>**, **<>>** push-buttons. After pressing the **<ENTER>** push-button the activation is confirmed. The **SAVE OPTION** sub-list is closed ignoring all settings made in it after pressing the **<ESC>** push-button.



SAVE OPTIONS sub-list; the selection of the SAVE MIN SPECT. in SM (a) and in VM (b)

To see the **MIN** values on the display during the real time **1/1 OCTAVE** or **1/3 OCTAVE** analysis the user has to activate the option in the **DISPLAY** list (path: **MENU / DISPLAY / DISPLAY SETUP / SPECTRUM VIEW / MIN** with active **SPECTRUM** mode or path: **MENU / DISPLAY / DISPLAY MODES / SPECTRUM**).

### 7.3 Loading the files with the measurement results - LOAD

The **LOAD** is used for loading data file from the FLASH DISC (e.g. for the verification or comparison). The position is opened after pressing the **<ENTER>** push-button when the **LOAD** text in the **FILE** list is displayed inversely (selected using the **<▲>**, **<▼>** (or **<◀>**, **<▶>**) push-buttons). The return to the **FILE** list is possible after pressing the **<ESC>** push-button.



FILE list with the **LOAD** text highlighted (displayed inversely)



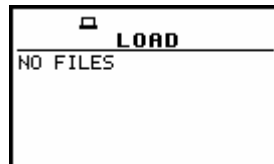
**Notice:** It is not possible to load the file during the execution of the measurements. On such attempt the message: **MEASUREMENT IN PROGRESS** is displayed for about 3 seconds.

After pressing the **<ENTER>** push-button the instrument checks its current state. In the case when the measurements are performed, the file loading is impossible and the message is displayed.



Display after the attempt to perform an unavailable operation during measurement in progress

In the case when the instrument memory is empty (no file is stored), after entering the **LOAD** window the **NO FILES** text is displayed and the instrument waits for the reaction of the user. The user should press then the **<ESC>**, **<ENTER>** (the instrument returns to the **FILE** list) or **<START / STOP>** push-button (the instrument starts the measurement).



Display during the execution of the **LOAD** operation

The current number of the file and the total number of the saved files is displayed in the first line of the **LOAD** window. The name of the file is displayed in the second line (its current number is presented in the first line). The name of the file suggests the operation the file was created-in. The names in which the first character is @ are coming from the **AUTO SAVE** function. The file with the default name @Timer@ is coming from the **AUTO SAVE** function executed in the **TIMER** operation. The other names suggest the **SAVE / SAVE NEXT** function. The type of the current file (**LEVEL METER**, **1/1 OCTAVE**, **1/3 OCTAVE**, **DOSE METER**, **FFT** and **RT60**) and the mode (**[SOUND]** or **[VIBR.]**) are given in the third line. If during the measurements which results are saved in the file, the logger file was also created its name is displayed in the fourth line.



**Notice:** The logger file can be deleted from the instrument's memory in the **FILE / DELETE / LOGGER FILES** window and this deleting operation does not modify the contents of the fourth line of the **LOAD** window.

The date and time of the **SAVE** operation are displayed in the fifth and sixth line, respectively. The change of the current file with the unit step can be done after pressing the <<>, <>> push-buttons. The first file is available after pressing the <<> with <SHIFT> push-button (or <V> with <SHIFT>) and the last one is displayed after pressing the <>> with <SHIFT> push-button (or <A> with <SHIFT>).

LOAD	LOAD	LOAD	LOAD
FILE NO. : 1/189	FILE NO. : 5/189	FILE NO. : 39/189	FILE NO. : 52/189
FILE NAME: 19MAR0	FILE NAME: 19MAR65	FILE NAME: @SPECT2	FILE NAME: @SPECT15
LEVEL METER [VIBR.]	LEVEL METER [SOUND]	1/1 OCTAVE [SOUND]	FFT [VIBR.]
LOG. FILE:	LOG. FILE:	LOG. FILE:	LOG. FILE: &LOG2
DATE: 19 MAR 2007	DATE: 19 MAR 2007	DATE: 20 MAR 2007	DATE: 21 MAR 2007
TIME: 16:16:00	TIME: 18:50:20	TIME: 15:01:04	TIME: 13:03:40

Exemplary contents of the **LOAD** window

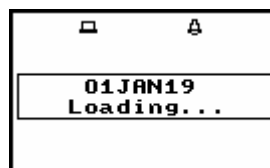


**Notice:** Many result files can be associated with one logger file, i.e. during the execution of the **AUTO SAVE** function.

LOAD	LOAD	LOAD	LOAD
FILE NO. : 52/175	FILE NO. : 53/175	FILE NO. : 54/175	FILE NO. : 63/175
FILE NAME: @SPECT15	FILE NAME: @SPECT16	FILE NAME: @SPECT17	FILE NAME: @SPECT26
FFT [VIBR.]	FFT [VIBR.]	FFT [VIBR.]	FFT [VIBR.]
LOG. FILE: &LOG2	LOG. FILE: &LOG2	LOG. FILE: &LOG2	LOG. FILE: &LOG2
DATE: 21 MAR 2007	DATE: 21 MAR 2007	DATE: 21 MAR 2007	DATE: 21 MAR 2007
TIME: 13:03:40	TIME: 13:03:52	TIME: 13:04:02	TIME: 13:05:38

Exemplary result files associated with the same logger file (&LOG2)

The name of the file is accepted and the file is loaded after pressing the <ENTER> push-button. The message with the name of the selected file is displayed during the execution of the loading operation.



Display during the execution of the loading function

The next message is displayed after successful end of loading operation. The instrument waits for the reaction of the user (any push-button should be pressed except the <SHIFT> or <ALT> one) and after pressing a push-button it returns to the **FILE** list.

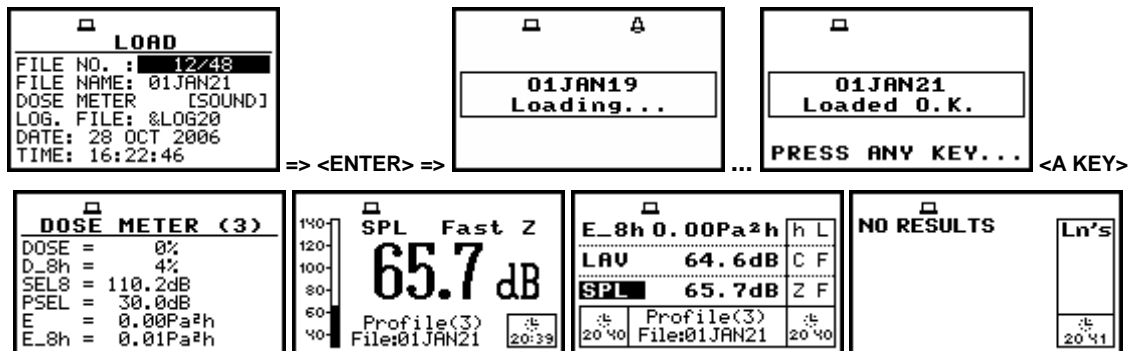
01JAN21 Loaded O.K. PRESS ANY KEY...	@RES1 Loaded O.K. PRESS ANY KEY...	@Timer@ Loaded O.K. PRESS ANY KEY...	FILE SAVE SAVE OPTIONS LOAD DELETE DELETE ALL DEFRAGMENTATION
--	--	--	---

<A KEY>

Displays after the execution of the **LOAD** operation

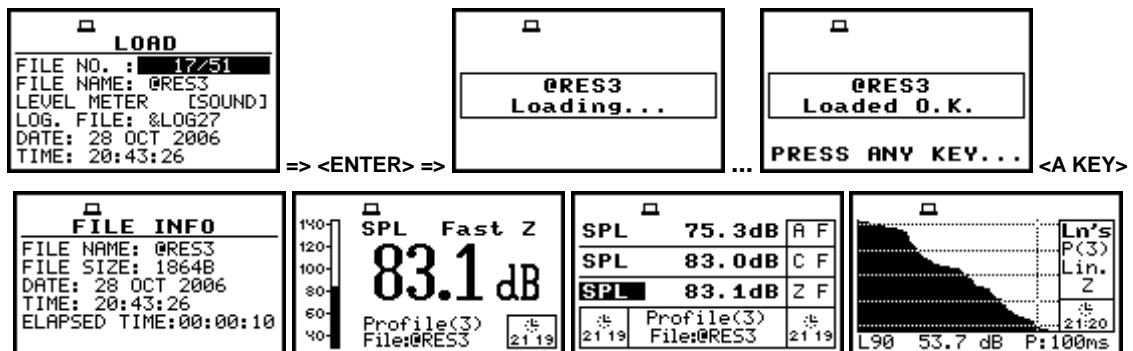


The contents of the loaded file is displayed in the available result presentation modes (after pressing the <▲>, <▼> push-buttons) depending on the current settings of the instrument.



Exemplary displays during the loading and checking the contents of a DOSE METER file

In the case when in the **DISPLAY MODES** sub-list the **STATISTICS** are activated and in the loaded file the statistic analysis was not included the display with **NO RESULT** message is presented in the graphical presentation of the statistical levels as it is given above.



Exemplary displays during the loading and checking the contents of a LEVEL METER file

## 7.4 Removing a file with the measurement results from memory - DELETE

The **DELETE** is used to remove a file from memory. In order to enter the window the user has to select the **DELETE** text (to display it inversely) using the <▲>, <▼> push-buttons and then press the <ENTER> one.



FILE list with the DELETE text highlighted (displayed inversely)

In the **DELETE** window, there are three elements: **RESULT FILES**, **LOGGER FILES** and **SETUP FILES**. In order to enter the selected sub-list the user has to select the proper text (to display it inversely) using the <▲>, <▼> (or <◀>, <▶>) push-buttons and then press the <ENTER> one. The **DELETE** window is closed and the instrument returns to the **FILE** list after pressing the <ESC> one.

### 7.4.1 Deleting files with the main results - RESULT FILES

In order to enter the window one has to press the **<ENTER>** push-button on the inversely displayed **RESULT FILES** text of the **DELETE** sub-list using the **<▲>**, **<▼>** (or **<◀>**, **<▶>**) push-buttons. The **DELETE** sub-list is closed and the instrument returns to the **FILE** list after pressing the **<ESC>** push-button.

In order to enter the list of the saved result files in the flash memory one has to press the **<ENTER>** push-button. In the case when the result files were not saved in the memory, the special message is displayed and the instrument waits for the reaction of the user. The user should press any push-button except the **<SHIFT>** and **<ALT>**.



**RESULT FILES** selected to be deleted and the flash memory does not contain any file

After pressing the **<ENTER>** push-button the instrument checks its current state. In the case when the measurements are performed, the **RESULT FILES** entering is impossible. In such case, the message is displayed and the instrument returns after few seconds to the **DELETE** sub-list.



Display after the attempt to perform an unavailable operation during measurement in progress

The same data about the existing in the instrument files as in the **FILE / LOAD** window are displayed after successful opening the **FILE / DELETE / RESULT FILES** one (pressing the **<ENTER>** push-button).

The current number of the file and the total number of the saved files is displayed in the first line of the window.

The name of the file is displayed in the second line (its current number is presented in the first line).

The name of the file suggests the operation the file was created-in. The names in which the first character is @ are coming from the **AUTO SAVE** function. The file with the default name @Timer@ is coming from the **AUTO SAVE** function executed in the **TIMER** operation. The other names suggest the **SAVE / SAVE NEXT** function. The type of the current file **LEVEL METER**, **1/1 OCTAVE**, **1/3 OCTAVE**, **DOSE METER**, **FFT** or **RT60**) and the mode (**[SOUND]** or **[VIBR.]**) are given in the third line. If during the measurements which results are saved in the file, the logger file was also created its name is displayed in the fourth line.



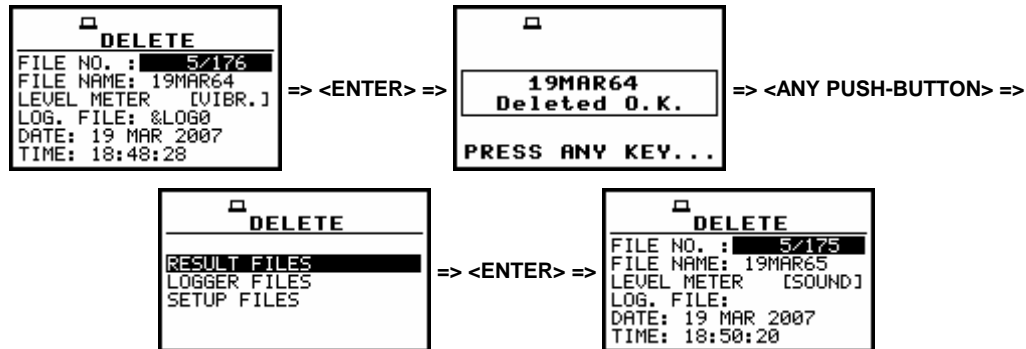
**Notice:** The logger file can be deleted from the instrument's memory in the **FILE / DELETE / LOGGER FILES** window and this deleting operation does not modify the contents of the fourth line of the **DELETE** window.

The **DATE** and **TIME** of the **SAVE** operation are displayed in the fifth and sixth line, respectively. The change of the current file with the unit step can be done after pressing the **<◀>**, **<▶>** push-buttons. The first file is available after pressing the **<◀>** with **<SHIFT>** push-button (or **<▼>** with **<SHIFT>**) and the last one is displayed after pressing the **<▶>** with **<SHIFT>** push-button (or **<▲>** with **<SHIFT>**).

<b>DELETE</b> FILE NO. : 40/174 FILE NAME: @SPECT2 1/1 OCTAVE [SOUND] LOG. FILE: DATE: 20 MAR 2007 TIME: 15:01:04	<b>DELETE</b> FILE NO. : 59/174 FILE NAME: @SPECT21 FFT [VIBR.] LOG. FILE: &LOG2 DATE: 21 MAR 2007 TIME: 13:04:46	<b>DELETE</b> FILE NO. : 174/174 FILE NAME: @EXAMP3 LEVEL METER [SOUND] LOG. FILE: &LOG40 DATE: 23 MAR 2007 TIME: 17:13:40
---	---	--

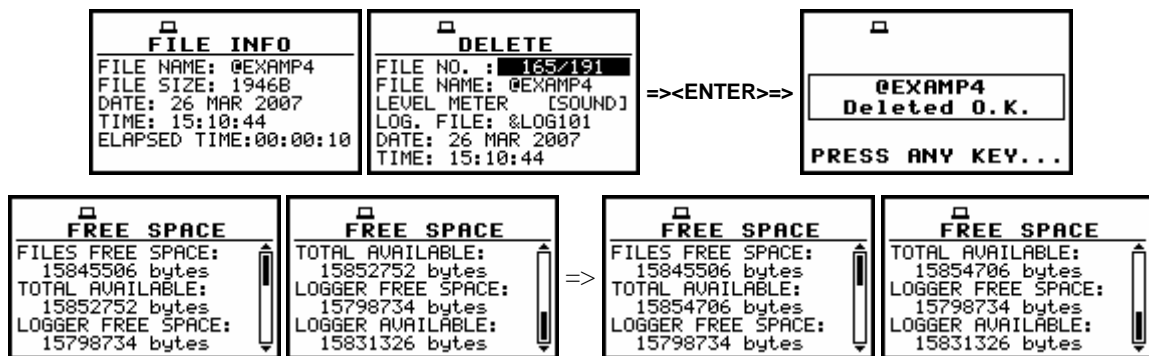
Selection of the RESULT FILES to be deleted

The selected file is deleted after pressing the **<ENTER>** push-button. The message is displayed after the successful end of the operation. The instrument waits for the reaction of the user (any push-button should be pressed except the **<SHIFT>** and **<ALT>** one) and after pressing a push-button it returns to the **DELETE** sub-list.



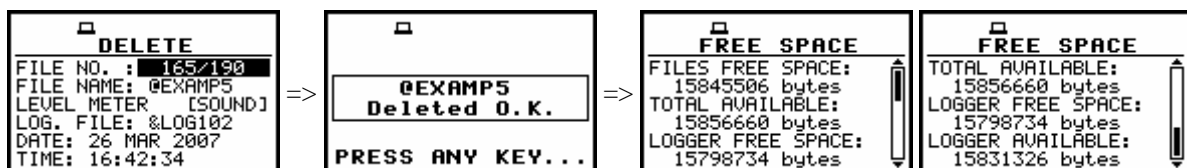
Execution of the RESULT FILES deletion

After the execution of the result files removing from the memory usually the **FREE SPACE** memory (path: **MENU / FILE / FREE SPACE**) rests the same as before the deletion but **TOTAL AVAILABLE** memory is increased. It is because erased file was somewhere in the file's space. The file is no longer accessible but the recuperated memory is still unused for the next saving. This memory becomes available after the defragmentation process (path: **MENU / FILE / DEFRAGMENTATION**) in which all files are moved to the continuous space. In order to illustrate it let us consider the result file named @EXAMP4, which is 1946 bytes long.



Execution of the @EXAMP4 file deletion and the influence of this process on the memory space

After removing @EXAMP4 from the memory, only the **TOTAL AVAILABLE** is increased (path: **MENU / FILE / FREE SPACE**).



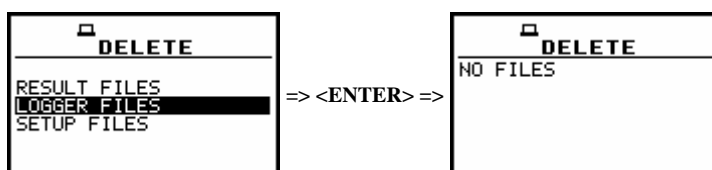
Execution of the @EXAMP5 file deletion and the influence of this process on the memory space

The displays above illustrates the erasing from the flash memory another file named @EXAMP5 which was also 1946 bytes long; the **FILES FREE SPACE**, **LOGGER FREE SPACE** and **LOGGER AVAILABLE** remain unchanged while the **TOTAL AVAILABLE** is increased.

#### 7.4.2 Deleting logger files - LOGGER FILES

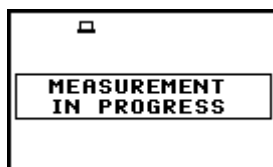
In order to enter the window one has to press the **<ENTER>** push-button on the inversely displayed **LOGGER FILES** text of the **DELETE** sub-list using the **<▲>**, **<▼>** push-buttons. The **DELETE** sub-list is closed and the instrument returns to the **FILE** list after pressing the **<ESC>** push-button.

In order to enter the list of the saved logger files in the memory one has to press the **<ENTER>** push-button. In the case when the logger files were not saved in the memory, the special message is displayed and the instrument waits for the reaction of the user. The user should press any push-button except the **<SHIFT>** and **<ALT>**.



**LOGGER FILES** selected to be deleted and the memory does not contain any file

After pressing the **<ENTER>** push-button the instrument checks its current state. In the case when the measurements are performed, the **LOGGER FILES** entering is impossible. In such case, the message is displayed and the instrument returns after few seconds to the **DELETE** sub-list.



**Display after the attempt to perform an unavailable operation during measurement in progress**

The similar data about the existing in the instrument logger files as in the **DISPLAY / LOGGER VIEW** window are displayed after successful opening the **FILE / DELETE / LOGGER FILES** one (pressing the **<ENTER>** push-button).

In the first line, the available still logger's memory is displayed followed by:

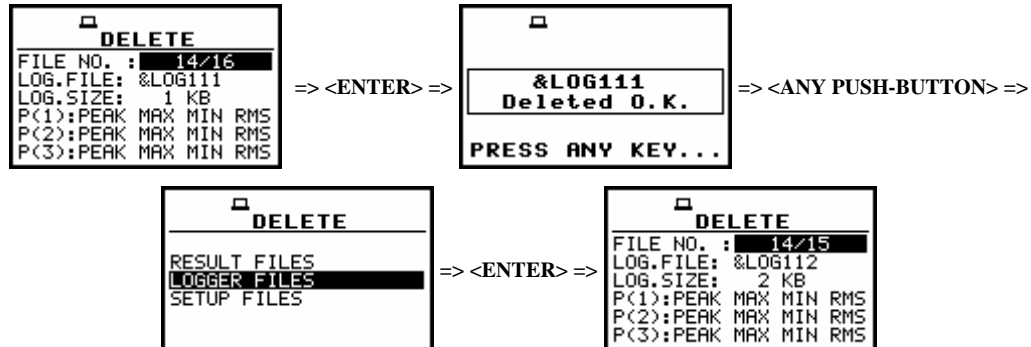
- The selected number of the logger's file and the number of all saved files (**FILE NO.:**).
- The name of the logger's file (**LOG.FILE:**).
- The size of the logger file which name is displayed in the previous line (**LOG.SIZE:**).
- The results saved (if any are present) in the logger from the first profile (**P(1):**).
- The results saved (if any are present) in the logger from the second profile (**P(2):**).
- The results saved (if any are present) in the logger from the third profile (**P(3):**).

The change of the current file with the unit step can be done after pressing the **<◀>**, **<▶>** push-buttons. The first file is available after pressing the **<◀>** with **<SHIFT>** push-button (or **<▼>** with **<SHIFT>**) and the last one is displayed after pressing the **<▶>** with **<SHIFT>** push-button (or **<▲>** with **<SHIFT>**).

<b>DELETE</b> FILE NO. : 14/16 LOG.FILE: &LOG111 LOG.SIZE: 1 KB P<1>:PEAK MAX MIN RMS P<2>:PEAK MAX MIN RMS P<3>:PEAK MAX MIN RMS	<b>DELETE</b> FILE NO. : 2/16 LOG.FILE: &LOG96 LOG.SIZE: 2 KB P<1>:PEAK MAX MIN RMS P<2>:PEAK RMS P<3>:MAX MIN	<b>DELETE</b> FILE NO. : 13/16 LOG.FILE: &LOG110 LOG.SIZE: 1 KB P<1>:PEAK P-P MAX RMS P<2>:PEAK P-P MAX RMS P<3>:PEAK P-P MAX RMS	<b>DELETE</b> FILE NO. : 14/16 LOG.FILE: &LOG111 LOG.SIZE: 1 KB P<1>:PEAK MAX MIN RMS P<2>:PEAK MAX MIN RMS P<3>:PEAK MAX MIN RMS
---	--	---	---

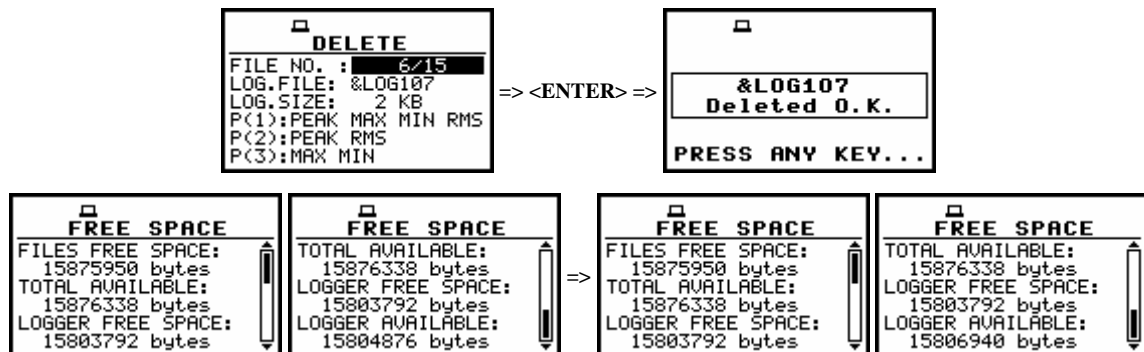
Selection of the **LOGGER FILES** to be deleted

The selected file is deleted after pressing the **<ENTER>** push-button. The message is displayed after the successful end of the operation. The instrument waits for the reaction of the user (any push-button should be pressed except the **<SHIFT>** and **<ALT>** one) and after pressing a push-button it returns to the **DELETE** sub-list.

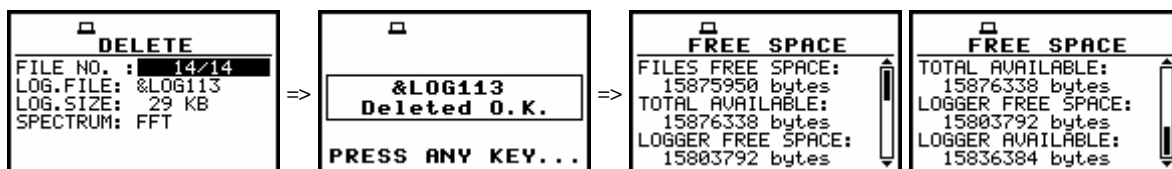
Execution of the **LOGGER FILES** deletion

After the execution of the logger files deletion from the memory, usually the logger free space rests the same as before the deletion but the total logger available memory is increased. It is because erased file was somewhere in the file's space. The file is no longer accessible but the recuperated memory is still unused for the next saving. This memory becomes available after the defragmentation process (*path: MENU / FILE / DEFRAGMENTATION / LOGGER DEFRAGMENT.*) in which all files are moved to the continuous space.

It can be illustrated on the figures below by erasing from the memory 2 kB-long logger file named &LOG107. The presented there **FREE SPACE** window comes from the **FILE** list.

Execution of the **&LOG107** file deletion from the logger memory and its influence on the memory space (**LOGGER AVAILABLE**)

The displays below illustrates the erasing from the logger memory another big file (29 kB) named &LOG113 just after the erasing of the file &LOG107 the **FILES FREE SPACE**, **TOTAL AVAILABLE** and **LOGGER FREE SPACE** remain unchanged while the **LOGGER AVAILABLE** is increased.

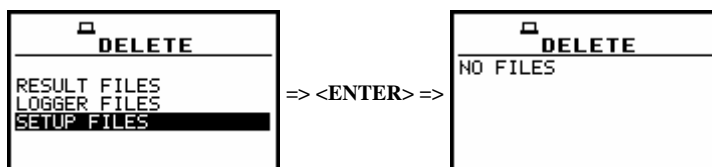


Execution of the &amp;LOG113 file deletion and the influence of this process on the memory space

### 7.4.3 Deleting files with setup settings - SETUP FILES

In order to enter the window one has to press the **<ENTER>** push-button on the inversely displayed **SETUP FILES** text of the **DELETE** sub-list using the **<▲>**, **<▼>** push-buttons. The **DELETE** sub-list is closed and the instrument returns to the **FILE** list after pressing the **<ESC>** push-button.

In order to enter the list of the saved setup files in the memory one has to press the **<ENTER>** push-button. In the case when the setup files were not saved in the memory, the special message is displayed and the instrument waits for the reaction of the user. The user should press any push-button except the **<SHIFT>** and **<ALT>**.



SETUP FILES selected to be deleted and the instrument's memory does not contain any file

After pressing the **<ENTER>** push-button the instrument checks its current state. In the case when the measurements are performed, the **SETUP FILES** entering is impossible. In such case, the message is displayed and the instrument returns after few seconds to the **DELETE** sub-list.

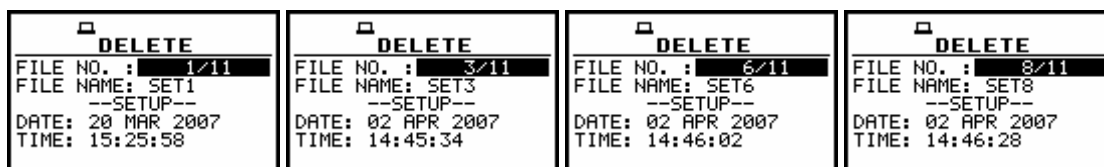


Display after the attempt to perform an unavailable operation during measurement in progress

The data about the existing in the instrument setup files are displayed after successful opening the **FILE / DELETE / LOGGER FILES** window (pressing the **<ENTER>** push-button).

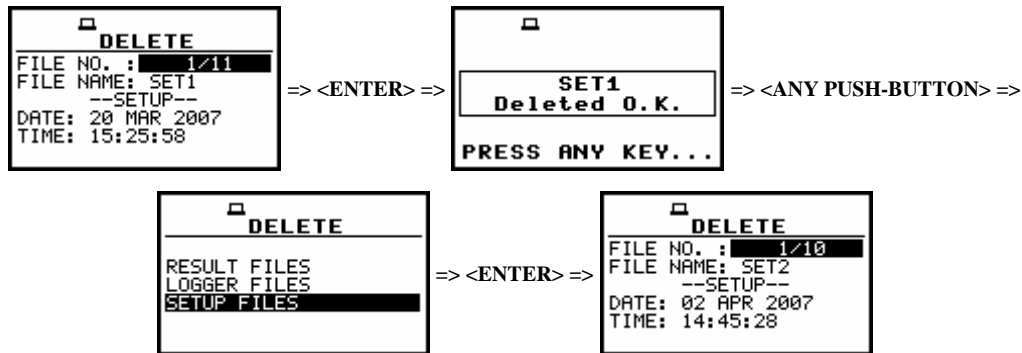
The current number of the file and the total number of the saved setup files is displayed in the first line of the window. The date and time of the **SAVE SETUP** operation is displayed in the last two lines respectively.

The change of the current file with the unit step can be done after pressing the **<<>**, **<>>** push-buttons. The first file is available after pressing the **<<>** with **<SHIFT>** push-button (or **<▼>** with **<SHIFT>**) and the last one is displayed after pressing the **<>>** with **<SHIFT>** push-button (or **<▲>** with **<SHIFT>**).



Selection of the SETUP FILES to be deleted

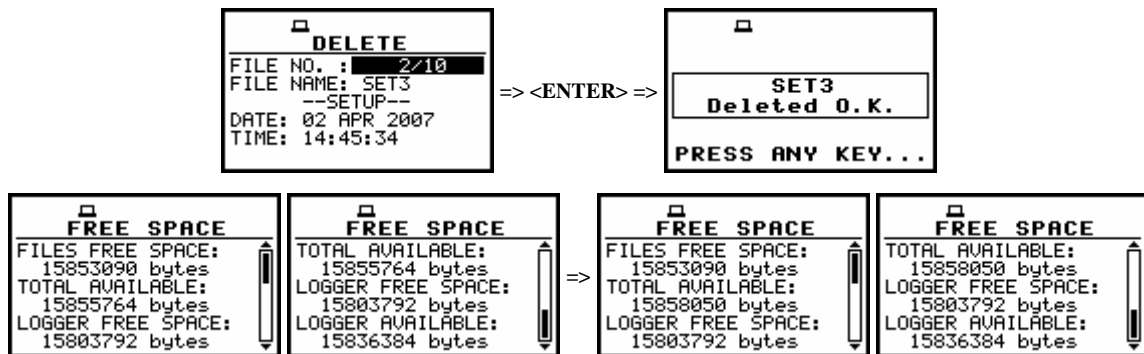
The selected file is deleted after pressing the **<ENTER>** push-button. The message is displayed after the successful end of the operation. The instrument waits for the reaction of the user (any push-button should be pressed except the **<SHIFT>** and **<ALT>** one) and after pressing a push-button it returns to the **DELETE** sub-list.



Execution of the **RESULT FILES** deletion

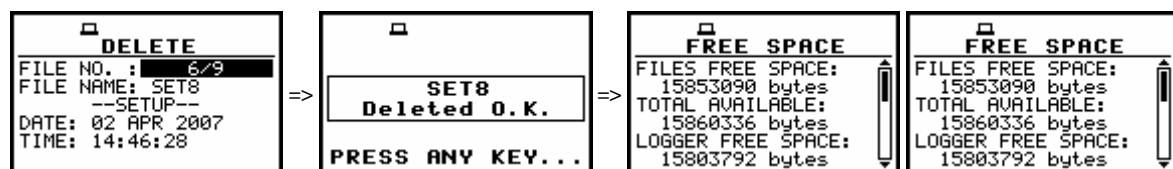
After the execution of the setup files removing from the memory usually the **FREE SPACE** memory (path: **MENU / FILE / FREE SPACE**) rests the same as before the deletion but **TOTAL AVAILABLE** memory is increased. It is because erased file was somewhere in the file's space. The file is no longer accessible but the recuperated memory is still unused for the next saving.

This memory becomes available after the defragmentation process (path: **MENU / FILE / DEFRAGMENTATION / FILES DEFRAGMENT.**) in which all files are moved to the continuous space. In order to illustrate it let us consider the removing from the memory the setup file named @SET3. After this, only the **TOTAL AVAILABLE** is increased (path: **MENU / FILE / FREE SPACE**).



Execution of the @SET3 file deletion and its influence on the memory space

The displays below illustrates the erasing from the flash memory another file named @SET8; the **FILES FREE SPACE**, **LOGGER FREE SPACE** and **LOGGER AVAILABLE** remain unchanged while the **TOTAL AVAILABLE** is increased.



Execution of the @SET8 file deletion and the influence of this process on the memory space

## 7.5 Removing all files with measurement results from memory - DELETE ALL

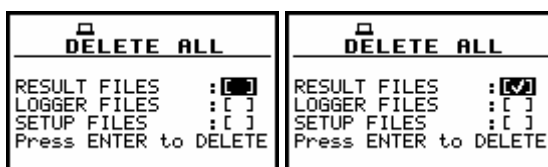
The **DELETE ALL** is used to remove all files from memory. In order to enter the position the user has to select the **DELETE ALL** text in the **FILE** list, using the **<▲>**, **<▼>** (or **<◀>**, **<▶>**) push-buttons and press the **<ENTER>** one. The **DELETE ALL** sub-list consists of three positions: **RESULT FILES**, **LOGGER FILES** and **SETUP FILES**.



**DELETE ALL** text highlighted (displayed inversely) in the **FILE** list

### 7.5.1 Deleting all result files - RESULT FILES

In order to activate the position the user has to place the special character in the line with the **RESULT FILES** text using the **<▶>** push-button. The **DELETE ALL** sub-list is closed and the instrument returns to the **FILE** list after pressing the **<ESC>** push-button. In order to enter the **DELETE ALL** window one has to press the **<ENTER>** push-button.



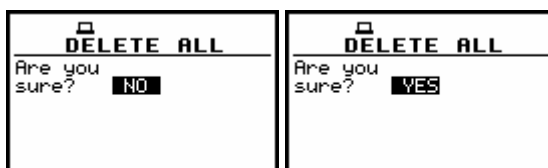
**RESULT FILES** selected to the execution of the **DELETE ALL** operation

After pressing the **<ENTER>** push-button the instrument checks its current state. In the case when the measurements are performed, the execution of the **DELETE ALL** operation is not possible. In such case, the message is displayed for a few seconds and the instrument returns to the **FILE** list.



Display after the attempt to perform an unavailable operation during measurement in progress

If the measurements are not performed the instrument requests the confirmation of the operation after entering this window (after pressing the **<ENTER>** push-button). After next pressing the **<ENTER>** push-button, when the **NO** option is selected, the window is closed and the instrument returns to the **FILE** list. The selection of the **NO** or **YES** option is possible using the **<◀>**, **<▶>** push-buttons. The return to the **FILE** list is also possible after pressing the **<ESC>** push-button.

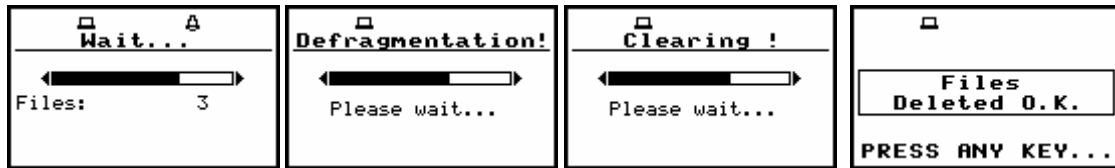


Displays with the confirmation window during the execution of the **DELETE ALL** operation

All files from the selected type are deleted after the **<ENTER>** push-button pressing, when the **YES** option is selected. The message is displayed after the successful execution of all stages



of the operation. The instrument waits for the reaction of the user (any push-button should be pressed except the **<SHIFT>** and **<ALT>** one) and after pressing a push-button it returns to the **FILE** list.

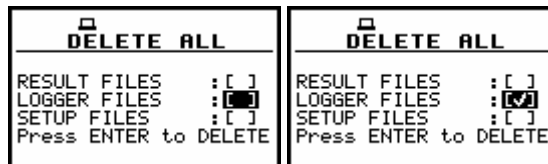


Execution of the DELETE ALL operation in the case of RESULT FILES selection

### 7.5.2 Deleting all logger files - LOGGER FILES

In order to activate the position the user has to place the special character in the line with the **LOGGER FILES** text using the **<>>** push-button. The **DELETE ALL** sub-list is closed and the instrument returns to the **FILE** list after pressing the **<ESC>** push-button.

In order to enter the **DELETE ALL** window one has to press the **<ENTER>** push-button.



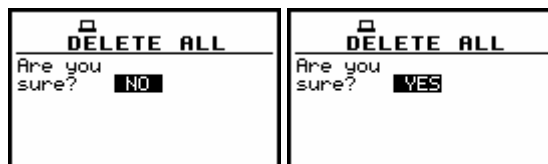
LOGGER FILES selected to the execution of the DELETE ALL operation

After pressing the **<ENTER>** push-button the instrument checks its current state. In the case when the measurements are performed, the execution of the **DELETE ALL** operation is not possible. In such case, the message is displayed for a few seconds and the instrument returns to the **FILE** list.



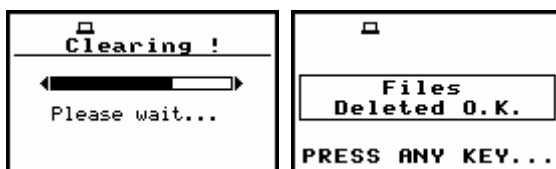
Display after the attempt to perform an unavailable operation during measurement in progress

If the measurements are not performed the instrument requests the confirmation of the operation after entering this window (after pressing the **<ENTER>** push-button). After next pressing the **<ENTER>** push-button, when the **NO** option is selected, the window is closed and the instrument returns to the **FILE** list. The selection of the **NO** or **YES** option is possible using the **<<>**, **<>>** push-buttons. The return to the **FILE** list is also possible after pressing the **<ESC>** push-button.



Displays with the confirmation window during the execution of the DELETE ALL operation

All files from the selected type are deleted after the **<ENTER>** push-button pressing, when the **YES** option is selected. The message is displayed after the successful execution of all stages of the operation. The instrument waits for the reaction of the user (any push-button should be pressed except the **<SHIFT>** and **<ALT>** one) and after pressing a push-button it returns to the **FILE** list.

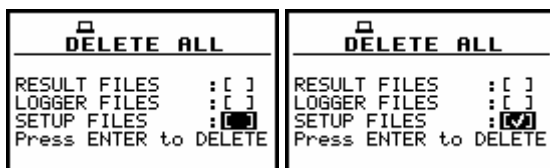


Execution of the DELETE ALL operation in the case of LOGGER FILES selected

### 7.5.3 Deleting all setup files - SETUP FILES

In order to activate the position the user has to place the special character in the line with the **SETUP FILES** text using the **<>>** push-button. The **DELETE ALL** sub-list is closed and the instrument returns to the **FILE** list after pressing the **<ESC>** push-button.

In order to enter the **DELETE ALL** window one has to press the **<ENTER>** push-button.



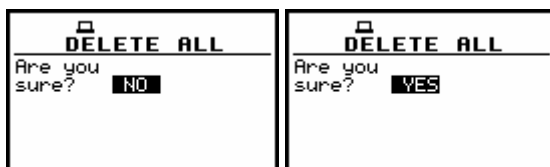
SETUP FILES selected to the execution of the DELETE ALL operation

After pressing the **<ENTER>** push-button the instrument checks its current state. In the case when the measurements are performed, the execution of the **DELETE ALL** operation is not possible. In such case, the message is displayed for a few seconds and the instruments returns to the **FILE** list.



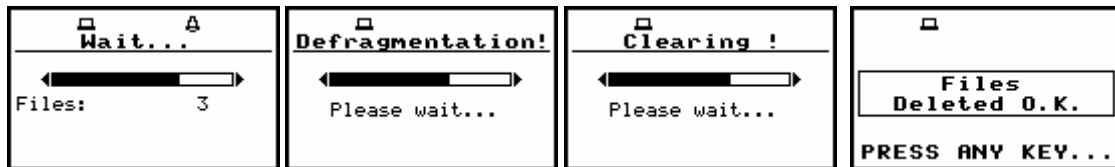
Display after the attempt to perform an unavailable operation during measurement in progress

If the measurements are not performed the instrument requests the confirmation of the operation after entering this window (after pressing the **<ENTER>** push-button). After next pressing the **<ENTER>** push-button, when the **NO** option is selected, the window is closed and the instrument returns to the **FILE** list. The selection of the **NO** or **YES** option is possible using the **<←>**, **<→>** push-buttons. The return to the **FILE** list is also possible after pressing the **<ESC>** push-button.



Displays with the confirmation window during the execution of the DELETE ALL operation

All files from the selected type are deleted after the **<ENTER>** push-button pressing, when the **YES** option is selected. The message is displayed after the successful execution of all stages of the operation. The instrument waits for the reaction of the user (any push-button should be pressed except the **<SHIFT>** and **<ALT>** one) and after pressing a push-button it returns to the **FILE** list.



Execution of the DELETE ALL operation in the case of SETUP FILES selection



**Notice:** The execution of the **DELETE ALL** function described above takes place in the case when only one type of the files is selected in the **DELETE ALL** sub-list. If all types are selected simultaneously and the logger, result and setup are saved, only **Clearing** operation is performed but two times – one time in logger files memory and one time in result and setup files memory. After clearing all memory, the defragmentation is not done. The memory merging is done only in the case of setup and results memory, as these two different types of files are saved together in the same space.



Execution of the DELETE ALL operation for all type files simultaneously

## 7.6 Merging file space - DEFRAGMENTATION

The **DEFRAGMENTATION** is used to make the file memory continuous. All new files are saved starting from the beginning of the free memory space. The memory occupied by the deleted file, assuming that the file was not the last one, remains unused for the next files saving. After the removing a file the files memory becomes discontinuous, with unused parts, which cannot be utilized in the future.

The situation changes after the process called defragmentation. During this process, the files saved in the files memory are moved in order to obtain the continuous occupied space. The files' merging is performed separately for two parts of the instrument's memory: the **FILES DEFRAGMENT.** is used to join the result and setup files and **LOGGER DEFRAGMENT.** is used in the case of the logger.

Before the defragmentation the **FILES FREE SPACE** and **TOTAL AVAILABLE**, characterizing the result memory (path: **MENU / FILE / FREE SPACE**), usually differ between each other. After this operation, these two parts are equal.

The same situation is in the case of the **LOGGER FREE SPACE** and **TOTAL AVAILABLE** characterizing the logger file. In order to enter the **DEFRAGMENTATION** sub-list the user has to select the **DEFRAGMENTATION** text in the **FILE** list, using the <▲>, <▼> (or <◀>, <▶>) push-buttons and press the <ENTER>.



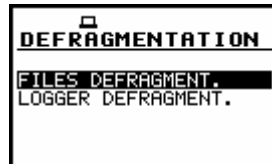
DEFRAGMENTATION text highlighted (displayed inversely) in the FILE list



**Notice:** The **DEFRAGMENTATION** must not be broken – the user should never press **<ESC>** or any other push-button during the **DEFRAGMENTATION** process.

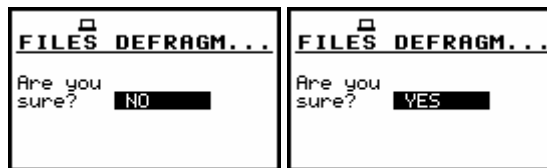
### 7.6.1 Merging result and setup files memory - FILES DEFRAGMENTATION

The **FILES DEFRAGMENT.** is used to join the result and setup files memory. In order to select this, the user has to display inversely the **FILES DEFRAGMENT.** text in the **DEFRAGMENTATION** sub-list using the **<▲>** (or **<◀>**) push-button.



**FILES DEFRAGMENT.** selected to the execution of the **DEFRAGMENTATION** operation

The **DEFRAGMENTATION** sub-list is closed and the instrument returns to the **FILE** list after pressing the **<ESC>** push-button. In order to continue the execution of the function one has to press the **<ENTER>** push-button. The instrument requests the confirmation of the operation. The next pressing of the **<ENTER>** push-button, when the **NO** option is selected, causes the closing of the window and the return to the **DEFRAGMENTATION** sub-list. The selection of the **NO** or **YES** option is possible using the **<◀>**, **<▶>** push-buttons. The return to the **DEFRAGMENTATION** sub-list is also possible after pressing the **<ESC>** push-button.



Confirmation windows during the execution of the **FILES DEFRAGMENTATION** operation

After pressing the **<ENTER>** push-button the instrument checks its current state. In the case when the measurements are performed, the execution of the **DEFRAGMENTATION** operation is not possible. In such case, the message is displayed and after few seconds instrument returns to the **DEFRAGMENTATION** sub-list.



Display after the attempt to perform an unavailable operation during measurement in progress

If the measurements are not performed, after pressing the **<ENTER>** push-button on the active **YES** option, the instrument checks whether the used result and setup files memory is continuous or not. If this memory is continuous, the **DEFRAGMENTATION** operation is not executed and the special message is displayed. The instrument waits for the reaction of the user (any push-button should be pressed except the **<SHIFT>** and **<ALT>** one) and after pressing a push-button it returns to the **DEFRAGMENTATION** sub-list.



Message in the case when the execution of the DEFRAGMENTATION operation is unnecessary

If there are conditions to execute the **DEFRAGMENTATION** operation, it is done and the current progress is shown on the display.

After the successful execution, the special message is displayed and the instrument waits for the reaction of the user. Any push-button should be then pressed except the **<SHIFT>** and **<ALT>** one. After pressing a push-button, the instrument returns to the **DEFRAGMENTATION** sub-list.



Execution of the DEFRAGMENTATION operation

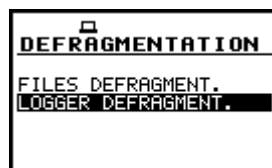
The displays below illustrate the results of the **FILES DEFRAGMENT.** – after the execution, the **FILES FREE SPACE** and **TOTAL AVAILABLE** become equal while the **LOGGER FREE SPACE** and **LOGGER AVAILABLE** remain unchanged.

<b>FREE SPACE</b> FILES FREE SPACE: 15869930 bytes TOTAL AVAILABLE: 15869930 bytes LOGGER FREE SPACE: 15850260 bytes	<b>FREE SPACE</b> TOTAL AVAILABLE: 15869930 bytes LOGGER FREE SPACE: 15850260 bytes LOGGER AVAILABLE: 15850260 bytes	=>	<b>FREE SPACE</b> FILES FREE SPACE: 15895490 bytes TOTAL AVAILABLE: 15895490 bytes LOGGER FREE SPACE: 15850260 bytes	<b>FREE SPACE</b> TOTAL AVAILABLE: 15895490 bytes LOGGER FREE SPACE: 15850260 bytes LOGGER AVAILABLE: 15850260 bytes
--	--	----	--	--

Result of the FILES DEFRAGMENTATION operation

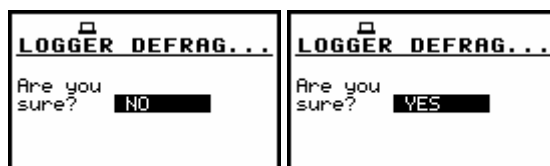
## 7.6.2 Merging logger files memory - **LOGGER DEFRAGMENT.**

The **LOGGER DEFRAGMENT.** is used to join the logger files memory. In order to select this, the user has to display inversely the **LOGGER DEFRAGMENT.** text using the **<▲>** (or **<◀>**) push-button.



**LOGGER DEFRAGMENT.** selected to the execution of the DEFRAGMENTATION operation

The **DEFRAGMENTATION** sub-list is closed and the instrument returns to the **FILE** list after pressing the **<ESC>** push-button. In order to continue the execution of the function one has to press the **<ENTER>** push-button. The instrument requests the confirmation of the operation. The next pressing of the **<ENTER>** push-button, when the **NO** option is selected, causes the closing of the window and the return to the **DEFRAGMENTATION** sub-list. The selection of the **NO** or **YES** option is possible using the **<◀>**, **<▶>** push-buttons. The return to the **DEFRAGMENTATION** sub-list is also possible after pressing the **<ESC>** push-button.



Confirmation windows during the execution of the **LOGGER DEFRAGMENTATION** operation

After pressing the **<ENTER>** push-button the instrument checks its current state. In the case when the measurements are performed, the execution of the **DEFRAGMENTATION** operation is not possible. In such case, the message is displayed and after few seconds instrument returns to the **DEFRAGMENTATION** sub-list.



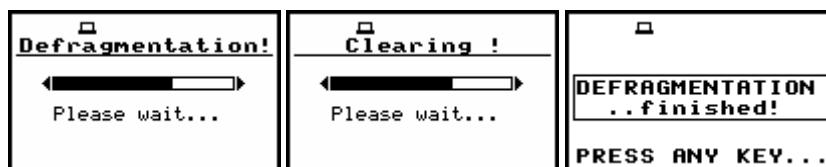
Display after the attempt to perform an unavailable operation during measurement in progress

If the measurements are not performed, after pressing the **<ENTER>** push-button on the active **YES** option, the instrument checks whether the used logger files memory is continuous or not. If this memory is continuous, the **DEFRAGMENTATION** operation is not executed and the special message is displayed. The instrument waits for the reaction of the user (any push-button should be pressed except the **<SHIFT>** and **<ALT>** one) and after pressing a push-button it returns to the **DEFRAGMENTATION** sub-list.



Message in the case when the execution of the **DEFRAGMENTATION** operation is unnecessary

If there are conditions to execute the **DEFRAGMENTATION** operation, it is done and the current progress is shown on the display. After the successful execution, the special message is displayed and the instrument waits for the reaction of the user. Any push-button should be then pressed except the **<SHIFT>** and **<ALT>** one. After pressing a push-button the instrument returns to the **DEFRAGMENTATION** sub-list.



Execution of the **DEFRAGMENTATION** operation

The displays below illustrate the results of the **LOGGER DEFRAGMENT**. – after the execution the **LOGGER FREE SPACE** and **LOGGER AVAILABLE** become equal while the **FILES FREE SPACE** and **TOTAL AVAILABLE** remain unchanged.

<b>FREE SPACE</b> FILES FREE SPACE: 15879858 bytes TOTAL AVAILABLE: 15879858 bytes LOGGER FREE SPACE: 15842148 bytes LOGGER AVAILABLE: 15842148 bytes	<b>FREE SPACE</b> TOTAL AVAILABLE: 15879858 bytes LOGGER FREE SPACE: 15842148 bytes LOGGER AVAILABLE: 15850404 bytes	=>	<b>FREE SPACE</b> FILES FREE SPACE: 15879858 bytes TOTAL AVAILABLE: 15879858 bytes LOGGER FREE SPACE: 15879858 bytes LOGGER AVAILABLE: 15850404 bytes	<b>FREE SPACE</b> TOTAL AVAILABLE: 15879858 bytes LOGGER FREE SPACE: 15850404 bytes LOGGER AVAILABLE: 15850404 bytes
---	--	----	---	--

Result of the **LOGGER DEFRAGMENTATION** operation

## 7.7 Checking the contents of the memory - CATALOGUE

The **CATALOGUE** is used for checking the contents of the memory (the list of the result and setup files). In order to enter the window the user has to select the **CATALOGUE** text in the **FILE** list, using the <▲>, <▼> (or <◀>, <▶>) push-buttons and press the <ENTER> one.

CATALOGUE text highlighted (displayed inversely) in the **FILE** list

In the case when the instrument memory is empty (no file is stored), after entering the **CATALOGUE** the **NO FILES** text is displayed and the instrument waits for the reaction of the user. The user should press then the <ESC>, <ENTER> (the instrument returns to the **FILE** list) or <START / STOP> push-button (the instrument starts the measurement).



CATALOGUE window when the memory is empty

In the case when the result and setup files memory in the instrument is not empty (some files are stored) another window is displayed in which the same data about the existing in the instrument files as in the **FILE / LOAD** window are presented.

The current number of the file and the total number of the saved result and setup files is displayed in the first line of the window. The name of the file is displayed in the second line (its current number is presented in the first line).

The name of the file suggests the operation the file was created-in. The names in which the first character is @ are coming from the **AUTO SAVE** function. The file with the default name @Timer@ is coming from the **AUTO SAVE** function executed in the **TIMER** operation. The other names suggest the **SAVE / SAVE NEXT** function. The type of the current file (**LEVEL METER**, **1/1 OCTAVE** or **1/3 OCTAVE**, **DOSE METER**, **FFT** and **RT60**) and the mode (**[SOUND]** or **[VIBRATION]**) is given in the third line. If during the measurements which results are saved in the file, the logger file was also created its name is displayed in the fourth line.



**Notice:** The logger file can be deleted from the instrument's memory in the **FILE / DELETE / LOGGER FILES** window and this deleting operation does not modify the contents of the fourth line of the **CATALOGUE** window.

The date and time of the **SAVE** operation are displayed in the fifth and sixth line, respectively. The change of the current file with the unit step can be done after pressing the <<>, <>> push-buttons. The first file is available after pressing the <<> with <SHIFT> push-button (or <V> with <SHIFT>) and the last one is displayed after pressing the <>> with <SHIFT> push-button (or <A> with <SHIFT>). The setup file is indicated by the **SETUP** text displayed in the third line instead of the **LEVEL METER** / **DOSE METER** text.

<b>CATALOGUE</b> FILE NO. : 2/175 FILE NAME: 19MAR61 LEVEL METER [VIBR.] LOG. FILE: &LOG DATE: 19 MAR 2007 TIME: 16:20:20	<b>CATALOGUE</b> FILE NO. : 5/175 FILE NAME: 19MAR64 LEVEL METER [VIBR.] LOG. FILE: &LOG0 DATE: 19 MAR 2007 TIME: 18:48:28	<b>CATALOGUE</b> FILE NO. : 31/175 FILE NAME: @RES25 LEVEL METER [SOUND] LOG. FILE: DATE: 19 MAR 2007 TIME: 18:55:50	<b>CATALOGUE</b> FILE NO. : 48/175 FILE NAME: @SPECT10 1/1 OCTAVE [SOUND] LOG. FILE: DATE: 20 MAR 2007 TIME: 15:02:24
<b>CATALOGUE</b> FILE NO. : 49/175 FILE NAME: SET1 --SETUP-- DATE: 20 MAR 2007 TIME: 15:25:58	<b>CATALOGUE</b> FILE NO. : 111/175 FILE NAME: @RES31 FFT [SOUND] LOG. FILE: DATE: 23 MAR 2007 TIME: 14:17:24	<b>CATALOGUE</b> FILE NO. : 119/175 FILE NAME: @RES39 FFT [VIBR.] LOG. FILE: DATE: 23 MAR 2007 TIME: 14:32:02	<b>CATALOGUE</b> FILE NO. : 171/175 FILE NAME: @EXAMP7 LEVEL METER [SOUND] LOG. FILE: &LOG104 DATE: 26 MAR 2007 TIME: 16:43:22

Contents of the CATALOGUE window



**Notice:** Many result files can be associated with one logger file, i.e. during the execution of the **AUTO SAVE** function.

<b>CATALOGUE</b> FILE NO. : 52/183 FILE NAME: @SPECT15 FFT [VIBR.] LOG. FILE: &LOG2 DATE: 21 MAR 2007 TIME: 13:03:40	<b>CATALOGUE</b> FILE NO. : 53/183 FILE NAME: @SPECT16 FFT [VIBR.] LOG. FILE: &LOG2 DATE: 21 MAR 2007 TIME: 13:03:52	<b>CATALOGUE</b> FILE NO. : 54/183 FILE NAME: @SPECT17 FFT [VIBR.] LOG. FILE: &LOG2 DATE: 21 MAR 2007 TIME: 13:04:02	<b>CATALOGUE</b> FILE NO. : 59/183 FILE NAME: @SPECT22 FFT [VIBR.] LOG. FILE: &LOG2 DATE: 21 MAR 2007 TIME: 13:04:58
--	--	--	--

Exemplary result files associated with the same logger file &LOG2 in the CATALOGUE window

## 7.8 Checking the free space in the memory - FREE SPACE

The **FREE SPACE** is used to read out the free space in the **FLASH DISC** memory of the instrument. In order to enter the window the user has to select the **FREE SPACE** text in the **FILE** list, using the <A>, <V> (or <<>, <>>) push-buttons and press the <ENTER> one.



**FREE SPACE** text highlighted (displayed inversely) in the FILE list

The files memory in the instrument is divided into two separate parts.

One part is dedicated for saving the result and setup files and its size is equal to 16252428 bytes. The second part is used for saving the logger files and its size is equal to 15859224 bytes.

The **FREE SPACE** window in the instrument after the execution of the **DELETE ALL** operation is presented below.



FREE SPACE	FREE SPACE
FILES FREE SPACE: 16252428 bytes	TOTAL AVAILABLE: 16252428 bytes
TOTAL AVAILABLE: 16252428 bytes	LOGGER FREE SPACE: 15859224 bytes
LOGGER FREE SPACE: 15859224 bytes	LOGGER AVAILABLE: 15859224 bytes

FREE SPACE window after the execution of the DELETE ALL operation

The **FREE SPACE** window contains four numbers. First two, named **FILES FREE SPACE** and **TOTAL AVAILABLE**, characterize the result and setup files memory.

The files are always saved starting from the beginning of the continuous memory space. The size in bytes of this space is given in the **FILES FREE SPACE** position.

If the result and setup files were not deleted from the memory the number of bytes displayed in the **TOTAL AVAILABLE** position is the same as in the **FILES FREE SPACE**. However, if some of them were deleted, assuming that they were not the last saved, the memory used by them is empty but it does not increase the continuous space.

In such case, the number given in the **TOTAL AVAILABLE** position is greater than that in the **FILES FREE SPACE**. The **DEFRAGMENTATION** operation, which merges files, should be used to increase the **FREE SPACE**.

The next two numbers given in the **FREE SPACE** window, named **LOGGER FREE SPACE** and **LOGGER AVAILABLE** characterize the logger files memory where the saving mechanism is the same. Therefore, the numbers presented in the **FREE SPACE** window depend on the history of the measurements and the operations performed by the user.

FREE SPACE	FREE SPACE
FILES FREE SPACE: 15879858 bytes	TOTAL AVAILABLE: 15879858 bytes
TOTAL AVAILABLE: 15879858 bytes	LOGGER FREE SPACE: 15850404 bytes
LOGGER FREE SPACE: 15850404 bytes	LOGGER AVAILABLE: 15850404 bytes

FREE SPACE window with the number depending on the measurements and operations performed

The window is closed and the instrument returns to the **FILE** list after pressing the **<ENTER>** or **<ESC>** push-buttons or it starts the measurements (after pressing the **<START / STOP>** one).

## 7.9 Saving setup files in the instrument's memory - SAVE SETUP

The **SAVE SETUP** is used for storing setup settings in the internal non-volatile (FLASH DISC) memory (files are always written at the beginning of a free continuous space) as a file (see Appendix B for the file formats). In order to enter the window the user has to select the **SAVE SETUP** text in the **FILE** list, using the **<▲>**, **<▼>** (or **<◀>**, **<▶>**) push-button and press the **<ENTER>** one.

FILE
DELETE ALL
DEFRAGMENTATION
CATALOGUE
FREE SPACE
<b>SAVE SETUP</b>
LOAD SETUP

SAVE SETUP text highlighted (displayed inversely) in the FILE list

There are two available functions: the **SAVE NEXT** – save a setup file with the name increased by one, and **SAVE** – save a setup file with the edited name. These functions are available after pressing the **<◀>**, **<▶>** push-buttons.

<b>SAVE SETUP</b> FILE NAME:SET SAVE NEXT Press ENTER to SAVE Press ESC to SKIP Press UP to EDIT	<b>SAVE SETUP</b> FILE NAME:SET SAVE Press ENTER to SAVE Press ESC to SKIP Press UP to EDIT
---	--

SAVE SETUP window in the FILE list

The name of the file, in which the setup settings are to be saved, is displayed above the **SAVE** or **SAVE NEXT** text. The default name for a setup file is displayed in the case of the first entering to this position (after power on). The default file name for setup settings is **SET**. The line of the setup file's name edition (**FILE NAME**) is opened after pressing the **<A>** push-button.

The user can skip the setup file's name edition and start saving file pressing the **<ENTER>** push-button or return to the **FILE** list pressing the **<ESC>** one. The edition process is presented on the Figure below. The displayed inversely character is currently edited. The **<<>**, **<>>**, **<A>**, **<V>** and **<SHIFT>** push-buttons are used for editing the name which cannot exceed eight characters.

<b>SAVE SETUP</b> FILE NAME:SE <b>T</b> SAVE NEXT Press ENTER to SAVE Press ESC to SKIP SH<:Delete SH>:Insert	<b>SAVE SETUP</b> FILE NAME:LE <b>T</b> .MET SAVE Press ENTER to SAVE Press ESC to SKIP SH<:Delete SH>:Insert
--	--

Display during the process of setting the character in the edited name

One can select the proper position of the character in the edited text using the **<<>**, **<>>** push-buttons.

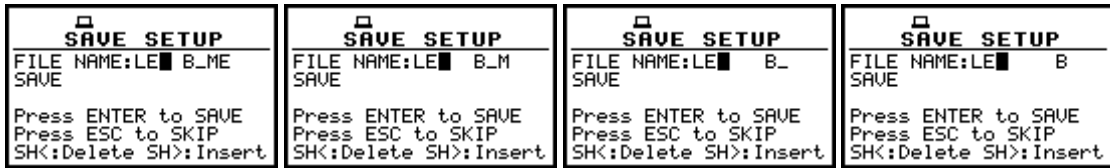
<b>SAVE SETUP</b> FILE NAME:SE <b>T</b> .MET SAVE Press ENTER to SAVE Press ESC to SKIP SH<:Delete SH>:Insert	<b>SAVE SETUP</b> FILE NAME:LE <b>T</b> .MET SAVE Press ENTER to SAVE Press ESC to SKIP SH<:Delete SH>:Insert	<b>SAVE SETUP</b> FILE NAME:LE <b>T</b> .MET SAVE Press ENTER to SAVE Press ESC to SKIP SH<:Delete SH>:Insert	<b>SAVE SETUP</b> FILE NAME:LEV <b>T</b> .MET SAVE Press ENTER to SAVE Press ESC to SKIP SH<:Delete SH>:Insert
--	--	--	---

Display during the selection of the character's position to be edited

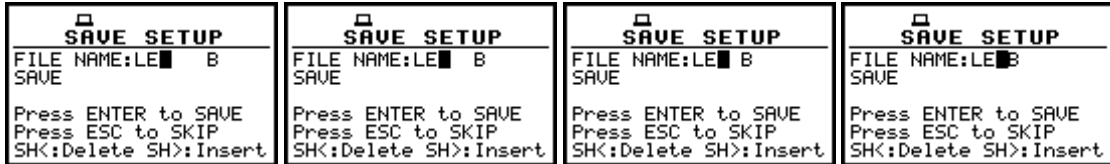
The available ASCII characters can be changed using the **<A>** (or **<V>**) push-button pressed together with the **<SHIFT>** one. The subsequent digits, underline, big letters and space appear on the display in the inversely displayed position after each pressing of the mentioned above push-buttons.

<b>SAVE SETUP</b> FILE NAME:LE <b>T</b> .MET SAVE Press ENTER to SAVE Press ESC to SKIP SH<:Delete SH>:Insert	<b>SAVE SETUP</b> FILE NAME:LE <b>T</b> .MET SAVE Press ENTER to SAVE Press ESC to SKIP SH<:Delete SH>:Insert	<b>SAVE SETUP</b> FILE NAME:LE <b>T</b> .MET SAVE Press ENTER to SAVE Press ESC to SKIP SH<:Delete SH>:Insert	<b>SAVE SETUP</b> FILE NAME:LE <b>T</b> .MET SAVE Press ENTER to SAVE Press ESC to SKIP SH<:Delete SH>:Insert
<b>SAVE SETUP</b> FILE NAME:LE <b>T</b> .MET SAVE Press ENTER to SAVE Press ESC to SKIP SH<:Delete SH>:Insert	<b>SAVE SETUP</b> FILE NAME:LE <b>T</b> .MET SAVE Press ENTER to SAVE Press ESC to SKIP SH<:Delete SH>:Insert	<b>SAVE SETUP</b> FILE NAME:LE <b>T</b> .MET SAVE Press ENTER to SAVE Press ESC to SKIP SH<:Delete SH>:Insert	
<b>SAVE SETUP</b> FILE NAME:LE <b>T</b> .MET SAVE Press ENTER to SAVE Press ESC to SKIP SH<:Delete SH>:Insert	<b>SAVE SETUP</b> FILE NAME:LE <b>T</b> .MET SAVE Press ENTER to SAVE Press ESC to SKIP SH<:Delete SH>:Insert	<b>SAVE SETUP</b> FILE NAME:LE <b>T</b> .MET SAVE Press ENTER to SAVE Press ESC to SKIP SH<:Delete SH>:Insert	

Display during the selection of the character

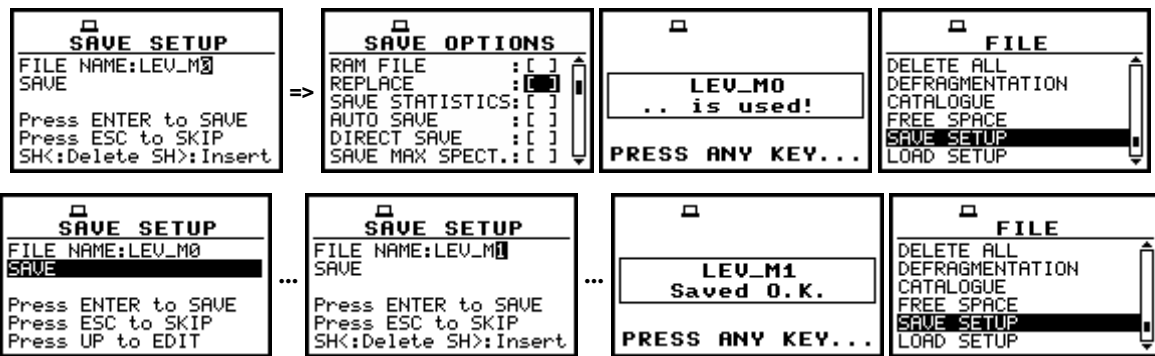


Displays in the FILE NAME edition after pressing the &lt;SHIFT&gt; and &lt;→&gt; push-buttons



Displays in the FILE NAME edition after pressing the &lt;SHIFT&gt; and &lt;←&gt; push-buttons

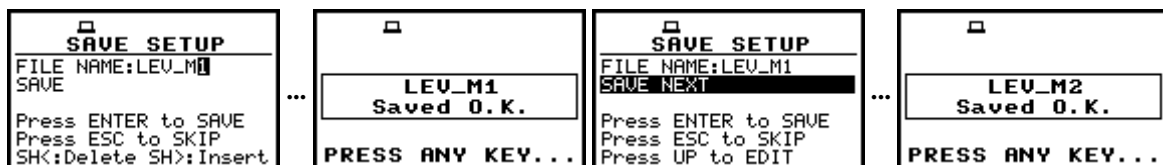
The edited name is accepted and the setup file is saved after pressing the <ENTER> push-button. The special warning is displayed in the case the file with the edited name already exists in the memory, if the **REPLACE** position is not activated (*path: MENU / FILE / SAVE OPTIONS*). The instrument waits then for a reaction of the user (any push-button should be pressed except the <SHIFT> or the <ALT>).



Displays during the attempt of overwriting the existing file, changing the name and saving data

All changes introduced to the setup file name during the edition are ignored after pressing the <ESC> push-button. This pressing causes the return to the list from which the **SAVE** option was entered. The return after the edition to the line with the **SAVE** or **SAVE NEXT** text is possible after pressing the <▼> push-button.

The simplified edition consists in the addition at the end of the file name the natural number. The increase by one of the number is made automatically. After the saving operation execution the new setup file name is displayed and the instrument waits then for a reaction of the user (any push-button should be pressed except the <SHIFT> or the <ALT> one). In the next attempt of saving data, the new name is displayed in the **FILE NAME** line and that name is increased by one during the saving operation.



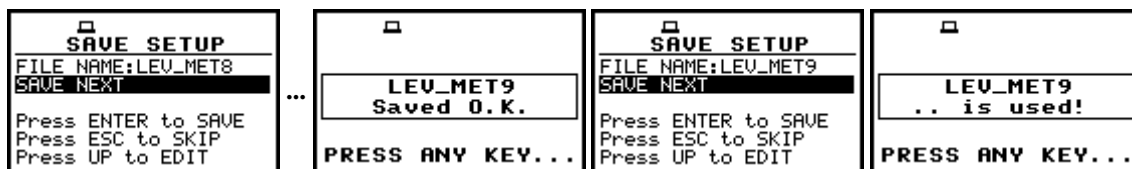
Displays in the simplified edition of the setup file name and saving operation execution

The number can be changed from 1 to N. The only limitation of the N value is the length of the file name, which cannot be longer than 8 characters. In the case when such limitation is achieved

and the instrument can not change automatically the file's name the only possibility is to edit new base file name.

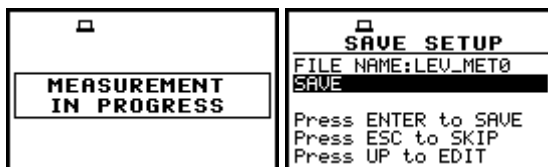


**Notice:** The files can be overwritten (the use of the same file name) **without any warning** if the **REPLACE** option is switched on (path: MENU / FILE / SAVE OPTIONS / REPLACE).



Displays in the simplified edition of the file name, saving and the “saturation” of that operation

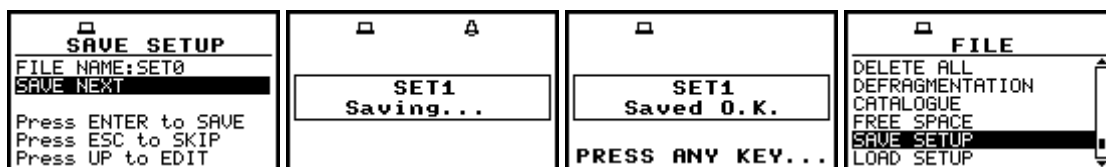
As it was already written, the instrument attempts to save a file after pressing the **<ENTER>** push-button. The saving is not possible in the case when the instrument is measuring the signal. The special message is displayed for about 3 seconds in this case and the instrument returns to the **SAVE SETUP** window.



Displays after the attempt to perform unavailable saving operation; the return to the **SAVE SETUP**



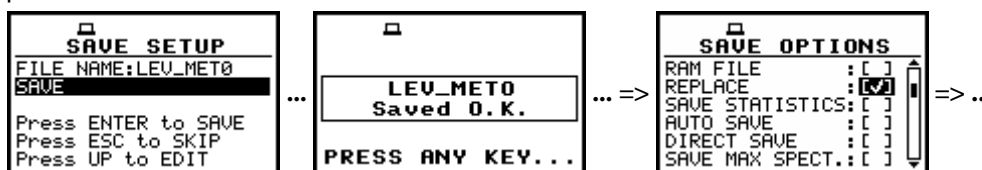
**Notice:** During the execution of the **SAVE** or **SAVE NEXT** function an additional window is displayed informing about the operation performed. This window can be unnoticed by the user as it appears for the short time.



View of all displays during and after the execution of the **SAVE** operation

As it was already written it is not possible to store the data in the file, which already exists, when the **REPLACE** is not active ([ ]) (path: MENU / FILE / SAVE OPTIONS / REPLACE).

The presented below sequence of displays illustrates the situation when during the name-edition process, the user selected the name that was used before but this time the **REPLACE** is active. The setup file is overwritten, the instrument displays a special message and waits for the reaction of the user (any push-button should be pressed except the **<SHIFT>** or the **<ALT>** one) and after pressing a push-button it returns to the **FILE** list.





Displays after the attempt to overwrite a file if the REPLACE is active

## 7.10 Loading the files with the setup settings - LOAD SETUP

The **LOAD SETUP** is used for loading setup setting file from the FLASH DISC (e.g. for performing different type of measurements with different instrument's settings). The position is opened after pressing the **<ENTER>** push-button when the **LOAD SETUP** text in the **FILE** list is displayed inversely (selected using the **<V>** (or **<V>**) or **<V>** (or **<V>**) with the **<SHIFT>** push-buttons). The return to the **FILE** list is possible after pressing the **<ESC>** push-button.



FILE list with the LOAD SETUP text highlighted (displayed inversely)



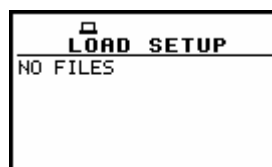
**Notice:** It is not possible to load the file during the execution of the measurements. On such attempt the message: **MEASUREMENT IN PROGRESS** is displayed for about 3 seconds.

After pressing the **<ENTER>** push-button the instrument checks its current state. In the case when the measurements are performed, the file loading is impossible and the message is displayed.



Display after the attempt to perform an unavailable operation during measurement in progress

In the case when the setup files were not saved, after entering the **LOAD SETUP** window, the **NO FILES** text is displayed and the instrument waits for the reaction of the user. The user should press then the **<ESC>**, **<ENTER>** (the instrument returns to the **FILE** list) or **<START / STOP>** push-button (the instrument starts the measurement).



Display during the execution of the LOAD SETUP operation

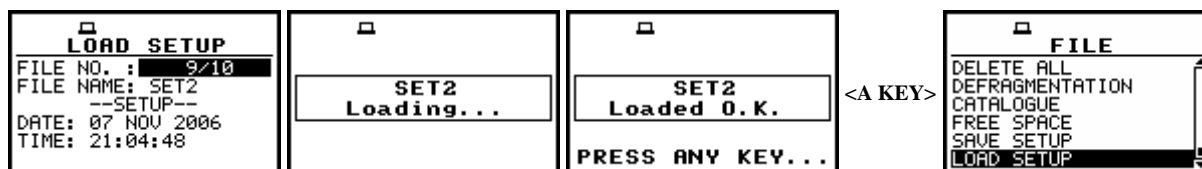
The current number of the setup file and the total number of the saved setup files is displayed in the first line of the **LOAD SETUP** window. The name of the file is displayed in the second line (its current number is presented in the first line).

The date and time of the **SAVE SETUP** operation is displayed in the fourth and fifth line respectively. The change of the current file with the unit step can be done after pressing the <<>, >>> push-buttons. The first file is available after pressing the <<> with <SHIFT> push-button (or <V> with <SHIFT>) and the last one is displayed after pressing the >>> with <SHIFT> push-button (or <A> with <SHIFT>).

LOAD SETUP	LOAD SETUP	LOAD SETUP	LOAD SETUP
FILE NO. : 1/10	FILE NO. : 3/10	FILE NO. : 7/10	FILE NO. : 10/10
FILE NAME: SET0	FILE NAME: LEV_M0	FILE NAME: LEV_MET0	FILE NAME: SET3
--SETUP--	--SETUP--	--SETUP--	--SETUP--
DATE: 07 NOV 2006	DATE: 07 NOV 2006	DATE: 07 NOV 2006	DATE: 07 NOV 2006
TIME: 20:36:38	TIME: 20:50:16	TIME: 21:00:36	TIME: 21:05:26

Exemplary contents of the **LOAD SETUP** window

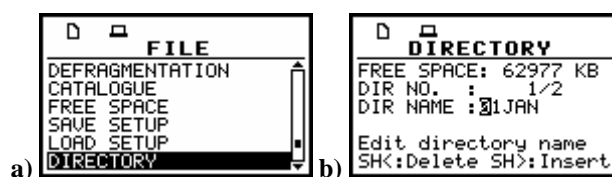
The name of the file is accepted and the file is loaded after pressing the <ENTER> push-button. The message with the name of the selected file is displayed during the execution of the loading operation. The next message is displayed after successful end of loading operation. The instrument waits for the reaction of the user (any push-button should be pressed except the <SHIFT> or <ALT> one) and after pressing a push-button it returns to the **FILE** list.



Displays after the execution of the **LOAD SETUP** operation

## 7.11 Connecting the external USB memory stick- DIRECTORY

The **DIRECTORY** text appears in the **FILE** list when the USB memory stick is connected to the device. (It is necessary to select in the **USB-HOST PORT** window the **USB DISK** position, *path: MENU / SETUP / USB-HOST PORT / USB DISK*). In order to enter the window the user has to select the **DIRECTORY** text in the **FILE** list, using the <A>, <V> (or <<>, >>>) push-buttons and press the <ENTER> one. The return to the **FILE** list is possible after pressing the <ESC> push-button.



**FILE** list with the **DIRECTORY** text selected (a) and the **DIRECTORY** window opened (b)

The **FREE SPACE** denotes the available free memory on the connected disk. The **DIR NO.** shows the number of the selected directory (the 1<sup>st</sup> number) and the number of the existing directories (the 2<sup>nd</sup> number). In the case the directories do not exist, these numbers are equal to zero. The **DIR NAME** enables one to edit the directory name (the 1<sup>st</sup> number) or displays its name. The help lines are placed at the display's bottom.

There are two ways of the current directory selection:

- the name edition in the **DIR NAME** line. The default name consists of the day number and the month abbreviation. The not existing directory will be created.
- the selection of the existing directory by means of the <<>, >>> push-buttons pressed in the line with the **DIR NO.** text. The name of the selected directory is displayed in the **DIR NAME** line.

The selection is confirmed after pressing the <ENTER> push-button which closes the window and returns to the **FILE** list. The return to this list is also possible after pressing the <ESC> push-button but

the selection is not confirmed. The selection of the directory is obligatory during the initialisation process. In this case also the **<ESC>** push-button confirms the settings.



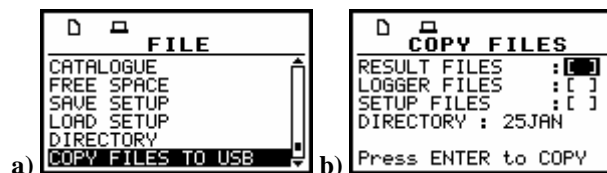
FILE list, the DIRECTORY window



**Notice:** After connecting a USB memory stick to the device the **paper sheet** icon appears in the top of the display.

## 7.12 Copying files to the external USB memory stick- COPY FILES TO USB

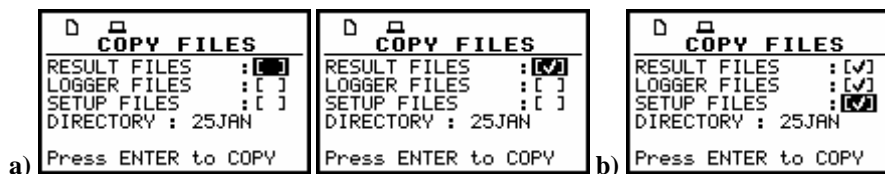
The **COPY FILES TO USB** is used for copying files to the external USB memory stick. The position is opened after pressing the **<ENTER>** push-button when the **COPY FILES TO USB** text in the **FILE** list is displayed inversely. The return to the **FILE** list is possible after pressing the **<ESC>** push-button.



FILE list with the COPY FILES TO USB text selected (a) and the COPY FILES window opened (b)

The **COPY FILES TO USB** sub-list consists of three positions to be selected: **RESULT FILES**, **LOGGER FILES** and **SETUP FILES** and **DIRECTORY** position with the name of the directory in which the files from the internal memory of the instrument will be stored.

In order to copy required type of the files the user has to place the special character in the line with the **RESULT FILES**, **LOGGER FILES** or **SETUP FILES** text using the **<>>** or **<v>** push-button. After next pressing the **<ENTER>** push-button, when no option is selected, the window is closed and the instrument returns to the **FILE** list. The return to the **FILE** list is also possible after pressing the **<ESC>** push-button.



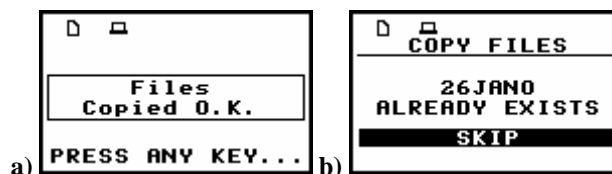
RESULT FILES selection to the execution of the COPY FILES TO USB operation (a); the RESULT, LOGGER and SETUP files selected to the execution of the COPY FILES TO USB operation (b)

After pressing the **<ENTER>** push-button the instrument checks its current state. When the measurements are performed, the execution of the **COPY FILES TO USB** operation is not allowed. In such case, the message is displayed for a few seconds and the instrument returns to the **FILE** list.



Display after the attempt to perform an unavailable operation during measurement in progress

If the measurements are not performed, the instrument starts the operation. After the operation **Files Copied O.K.** message is presented on the display. If a file has been already copied to the USB stick, a message **ALREADY EXIST** is presented on the display as well as the name of the file.



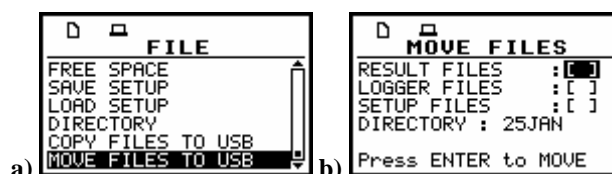
Display after the execution of COPY FILES TO USB operation (a) and when the file exists already (b)

### 7.13 Moving files to the USB memory stick- MOVE FILES TO USB

The **MOVE FILES TO USB** is used for moving files from internal instrument's memory to the USB memory stick.

The proper window is opened after pressing the **<ENTER>** push-button when the **MOVE FILES TO USB** text in the **FILE** list is displayed inversely.

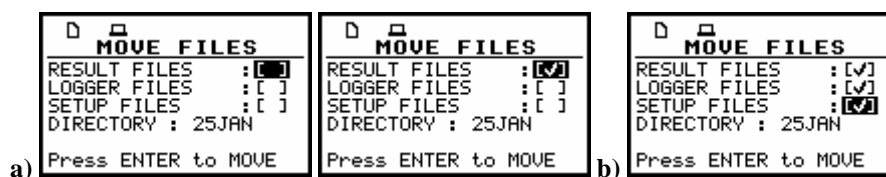
The return to the **FILE** list is possible after pressing the **<ESC>** push-button.



**FILE** list with the **MOVE FILES TO USB** text selected (a) and the **MOVE FILES** window opened (b)

The **MOVE FILES TO USB** sub-list consists of three positions: **RESULT FILES**, **LOGGER FILES**, **SETUP FILES** and **DIRECTORY** position with the name of the file in which the files from the internal memory of the instrument will be stored.

In order to activate required position the user has to place the special character in the line with the **RESULT FILES**, **LOGGER FILES** or **SETUP FILES** text using the **<>>** or **<v>** push-button. After next pressing the **<ENTER>** push-button, when no option is selected, the window is closed and the instrument returns to the **FILE** list. The return to the **FILE** list is also possible after pressing the **<ESC>** push-button.



**RESULT FILES** selection to the execution of the **MOVE FILES TO USB** operation (a) the **RESULT**, **LOGGER** and **SETUP** files selected to the execution of the **MOVE FILES TO USB** operation (b)



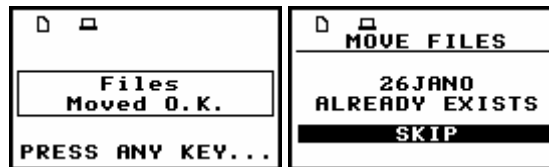
After pressing the **<ENTER>** push-button the instrument checks its current state. In the case when the measurements are performed, the execution of the **MOVE FILES TO USB** operation is not possible. In such case, the message is displayed for few seconds and the instruments returns to the **FILE** list.



Display after the attempt to perform an unavailable operation during measurement in progress

If the measurements are not performed, the instrument starts the operation. After the operation **Files Moved O.K.** message is presented on the display.

If the file already exist in the USB memory stick the message with the name of the file and **ALREADY EXISTS** text is presented on the display.



Display after the execution of MOVE FILES TO USB operation (a) and when the file already exists in the USB memory (b)



**Notice:** After the execution of the **MOVE FILES TO USB** operation, files, which have been moved, do not exist in the internal instrument's memory any more.



## 8 REPORTS PRINTING - REPORT

The printed reports of the sound or vibration measurement results in the predefined format can be obtained by means of the **REPORT** list. In order to open the **REPORT** list the user has to:

- press the **<MENU>** push-button,
- select from the main list, using the **<▲>**, **<▼>** (or **<◀>**, **<▶>**) push-buttons, the **REPORT** text (highlight it inversely),
- press the **<ENTER>** push-button.



Display in the main list; the **REPORT** text highlighted (displayed inversely)

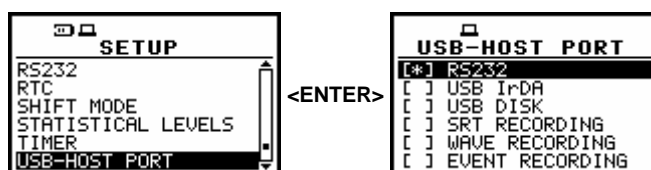
In order to obtain the report the user has to connect the instrument to the printer's RS 232 port using the **SV 55** RS 232 interface. This hardware interface is hidden in the Cannon type, 9-pin RS 232 plug-in. On the other end of the **SV 55** interface, which itself looks like a cable, there is the USB Host plug-in. This plug-in should be placed in the USB Host socket of the instrument.

It is also possible to **connect the instrument to the USB port** of a PC using the proper cable. Measurement results can be easily **downloaded to any PC (using USB interface and SvanPC software)** and printed out on the printer attached to a PC.



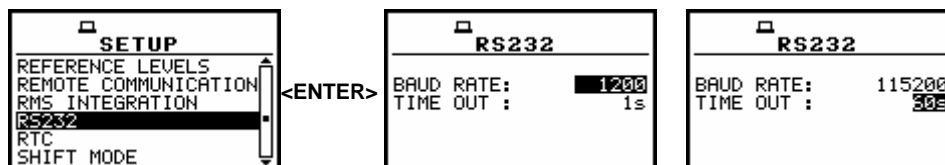
**Notice:** The converter **SV 55** serves as the RS 232 interface. The **SV 55** connection to the **USB Host** socket is detected and after successful detection the headphone icon is switched on. The transmission using the **SV 55** is possible only in the case when the instrument is not connected to a PC with the **USB Device** port.

The **RS232** is the default setting in the **USB-HOST PORT** in the **SETUP** list. Only in this option the USB host controller is awoken and the power consumption is the lower one.



**SETUP** list with the **USB-HOST PORT** selected and this window with the activated **RS232**

The user has to be sure that the **RS232** is activated (*path: MENU / SETUP / USB-HOST PORT / RS232*) before starting printing reports. Additionally, in the **RS232** list (*path: MENU / SETUP / RS232*) the user has to select the proper speed of the transmission and the parameter called **TIME OUT**.



**SETUP** list with the **RS232** selected and the exemplary contents of this window

The RS 232 interface transmission (**BAUD RATE**) speed can be selected from the following available values: **1200** (bits / second), **2400** (bits / s), **4800** (bits / s), **9600** (bits / s), **19200** (bits / s), **38000** (bits / s), **57600** (bits / s) or **115200** (bits / s).

The selection is made by means of the <<>, <>> push-buttons. The transmission speed should correspond to the one selected in a printer. The other RS 232 transmission parameters are fixed to **8 bits for data, No parity & 1 Stop bit**. The default value of the **TIME OUT** parameter is equal to one but it can be too short period for the printers, which are not too fast. In such case, this parameter has to be increased.

The description of the **SV 55** pin-outs is given in App. C. The printers with the different connections on the RS 232 socket require the special, individual RS 232 – RS 232 cable that should fulfil the suitable wire crossing.

The printers, in which the Centronics interface is available instead of the RS 232 one, can be connected to the instrument by means of the **SV 52** RS 232 – Centronics interface.

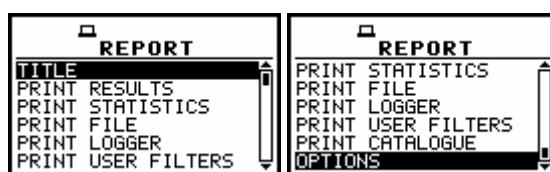
The printers, which have only USB interface, are currently not driven by the instrument.



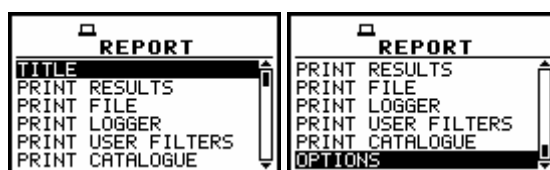
**Notice:** Switch the power off before connecting the instrument to any external device (e.g. a printer or a Personal Computer).

The **REPORT** list contains the following elements:

<b>TITLE</b>	that enables the user to give the header to the printed report;
<b>PRINT RESULTS</b>	that enables the user to print out the measurement results on the default printer or to send the measurement results to a PC using SvanPC software and USB interface;
<b>PRINT STATISTICS</b>	that enables the user to print out the statistics of the measurement results; this position is not available in the case of vibration measurements;
<b>PRINT FILE</b>	that enables the user to print out on a printer the selected file with the measurement results or to send it to a PC using SvanPC software and USB interface
<b>PRINT LOGGER</b>	that enables the user to print out on a printer connected directly to the instrument the measurement results in a selected file from the logger or to send it to a PC using SvanPC software and USB interface
<b>PRINT USER FILTERS</b>	that enables the user to print out on a printer connected directly to the instrument the values of the user filters introduced in the instrument or to send them to a PC using SvanPC software and USB interface;
<b>PRINT CATALOGUE</b>	that enables the user to print out the catalogue of the files
<b>OPTIONS</b>	that enables the user to determine the options of the report.



**REPORT windows in SM (SOUND METER) mode**



**REPORT windows in the vibration mode**



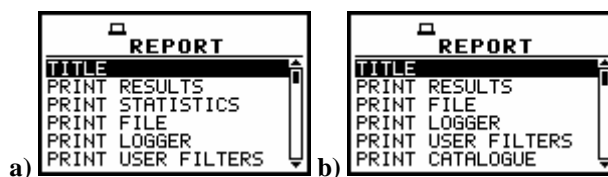
**Notice:** All reports are printed in the character format using the ASCII set.



**Notice:** The abbreviation **SM** mode refers to the **SOUND METER** mode, **VM** mode refers to the **VIBRATION METER** mode.

## 8.1 Edition of the user's text to be added to the reports - TITLE

The **TITLE** enables the user to edit the text added to the file and to the report to be printed. This operation is performed in the same way as it was described in the case of the **FILE NAME** window. In order to enter the position the user has to select the **TITLE** text in the **REPORT** list, using the <▲>, <◀> (or <▲>, <◀> with <SHIFT>) push-buttons and press the <ENTER> one.



REPORT windows with the TITLE selected in SM (a) and VM (b)

The text edition is made using the <▲>, <▼>, <◀>, <▶> and <SHIFT> push-buttons. The <◀>, <▶> push-buttons are used for changing the position of the edited character. The number (counted from the beginning of the text) of the edited character is displayed in the first line of the display, in the brackets. The text is limited to 128 characters.



Displays in the text edition of the report's header

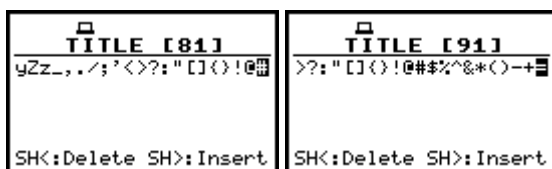
The <▲>, <▼> push-buttons are used for the selection of the ASCII characters. Digits, small and big letters, as well as special characters, all together 91, are available (cf. the view of the displays below). Small and big letters are placed one after another.

Pressing the <SHIFT> and <◀> push-buttons causes that the highlighted character is erased from the text (**DEL** function). Pressing the <SHIFT> and <▶> causes that the whole text is shifted one position to the right (**INSERT** function).

The window is closed and the instrument returns to the **REPORT** list after pressing the <ENTER> or <ESC> push-button. In the first case, the edited text is saved and will be added to the printed reports. In the latter case newly introduced text or the amendments made in the old one are ignored.



Displays with all available characters

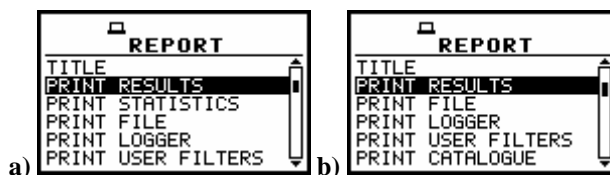


Displays with all available characters (cont.)

## 8.2 Printing of the measurement results - PRINT RESULTS

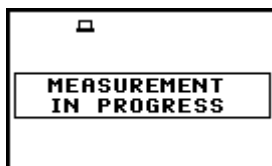
The **PRINT RESULTS** enables the user to print the report on the attached printer or to send out the report to a PC using the SvanPC software and the USB interface.

In order to enter the position the user has to select the **PRINT RESULT** text in the **REPORT** list, using the <▲>, <▼> (or <◀>, <▶>) push-buttons and press the <ENTER> one.



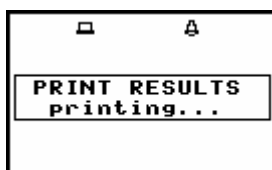
REPORT windows with the PRINT RESULTS selected in SM (a) and VM (b)

After pressing the <ENTER> push-button the instrument checks its current state. In the case when the measurements are performed, the printing is impossible and the message is displayed.



Display after the attempt to perform an unavailable operation during measurement in progress

In the case when a measurement was already performed and a result is available, the message presented below is displayed.



Display in the REPORT list; the execution of the PRINT RESULTS

When the message is on the display, the data are transferred from the instrument to the attached printer. The instrument returns to the **REPORT** list after transferring all data.

The exemplary report printed in A5 format (*path: MENU / REPORT / OPTION / FORMAT A5*) with the **TITLE** "13MAR" (*path: MENU / REPORT / TITLE / 13MAR*) looks as follows:

```
(C) SVANTEK      G7      No.12800
2007/08/03      (v6.06/6.06.2)  12:44:53

TITLE:

----- SETTINGS -----
```

```

Device mode.....: SOUND METER
Input.....: Microphone
Field correction...: FREE
Outdoor filter.....: Off
Device function....: LEVEL METER
LEVEL METER version: 6.06
Meas. start date...: 2007/08/03
Meas. start hour...: 12:42:04
Range.....: HIGH
Measure trigger....: Off
Logger trigger.....: Off
Repeat cycle.....: 2
Start delay.....: 1 s
Integration time...: 10 s
Calibr. factor.....: 6.6 dB
Calibration by.....: Measurement
Calibration date...: 2007/08/03
Calibration hour...: 12:39:58
Leq integration....: Linear

Profile:      #1      #2      #3
Filter:       A       C       Z
Detector:     FAST   FAST   FAST
Logger:       None   None   None

----- RESULTS -----

Measurement time: 00:00:10

Prof.:   #1      #2      #3
PEAK    63.7dB   68.9dB   76.3dB
MAX     48.5dB   56.1dB   70.7dB
MIN     41.8dB   50.2dB   58.1dB
SPL     48.5dB   55.9dB   67.9dB
LEQ     44.0dB   53.0dB   64.8dB
SEL     54.0dB   63.0dB   74.8dB
Ld      44.0dB   53.0dB   64.8dB
LEPd    44.0dB   53.0dB   64.8dB
Ltm3    46.2dB   55.4dB   69.3dB
Ltm5    47.5dB   55.6dB   69.5dB

L01     49.5dB   56.5dB   72.5dB
L10     45.3dB   54.7dB   68.1dB
L20     44.6dB   54.0dB   66.7dB
L30     44.2dB   53.5dB   65.4dB
L40     43.8dB   53.1dB   64.4dB
L50     43.5dB   52.7dB   63.4dB
L60     43.2dB   52.3dB   62.4dB
L70     43.0dB   51.9dB   61.4dB
L80     42.6dB   51.4dB   60.2dB
L90     42.2dB   51.0dB   58.0dB

-----

```

**Example of the printed results - A5 format**

The same result's report printed in A4 format is presented below:

The same results report printed in HTML format is presented below:				
(C) SVANTEK	G7	No.12800	2007/08/03	(v6.06/6.06.2) 12:42:54
TITLE:				
----- SETTINGS -----		----- SETTINGS -----		
Device mode.....: SOUND METER				
Input.....: Microphone				
Field correction...: FREE		Outdoor filter.....: Off		
Device function....: LEVEL METER		LEVEL METER version: 6.06		

```

Meas. start date...: 2007/08/03      Meas. start hour...: 12:42:04
Range.....: HIGH                    Measure trigger....: Off
Logger trigger....: Off              Repeat cycle.....: 2
Start delay.....: 1 s                Integration time...: 10 s
Calibr. factor....: 6.6 dB           Calibration by.....: Measurement
Calibration date...: 2007/08/03      Calibration hour...: 12:39:58
Leq integration....: Linear

Profile:      #1      #2      #3      Profile:      #1      #2      #3
Filter:       A       C       Z       Detector:     FAST     FAST     FAST
Logger:       None    None    None

```

----- RESULTS -----

Measurement time: 00:00:10

Prof.:	#1	#2	#3
PEAK	63.7 dB	68.9 dB	76.3 dB
MAX	48.5 dB	56.1 dB	70.7 dB
MIN	41.8 dB	50.2 dB	58.1 dB
SPL	48.5 dB	55.9 dB	67.9 dB
LEQ	44.0 dB	53.0 dB	64.8 dB
SEL	54.0 dB	63.0 dB	74.8 dB
Ld	44.0 dB	53.0 dB	64.8 dB
LEPd	44.0 dB	53.0 dB	64.8 dB
Ltm3	46.2 dB	55.4 dB	69.3 dB
Ltm5	47.5 dB	55.6 dB	69.5 dB
L01	49.5 dB	56.5 dB	72.5 dB
L10	45.3 dB	54.7 dB	68.1 dB
L20	44.6 dB	54.0 dB	66.7 dB
L30	44.2 dB	53.5 dB	65.4 dB
L40	43.8 dB	53.1 dB	64.4 dB
L50	43.5 dB	52.7 dB	63.4 dB
L60	43.2 dB	52.3 dB	62.4 dB
L70	43.0 dB	51.9 dB	61.4 dB
L80	42.6 dB	51.4 dB	60.2 dB
L90	42.2 dB	51.0 dB	58.0 dB

-----

**Example of the printed results from the SOUND METER mode (LEVEL METER) - A4 format**

(C) SVANTEK      G7      No.12800 2007/08/03      (v6.06/6.06.2)      12:50:42

TITLE:

----- SETTINGS -----

```

Device mode.....: VIBR. METER
Input.....: Accelerometer
Device function...: 1/3 OCTAVE
Meas. start date...: 2007/08/03
Range.....: LOW
Ref.level for Vel.: 1 nm/s
Measure trigger....: Off
Repeat cycle.....: 1
Integration time...: 1 m
Calibration by.....: Measurement
Calibration hour...: 12:39:58
Spectrum filter....: Z

```

```

Profile:      #1      #2      #3
Filter:       HP1     HP3     HP10
Logger:       None    None    None

```

----- SETTINGS -----

```

Meas. start hour...: 12:47:02
Ref.level for Acc.: 1 um/s2
Ref.level for Dil.: 1 pm
Logger trigger....: Off
Start delay.....: 1 s
Calibr. factor....: 0.0 dB
Calibration date...: 2007/08/03
RMS integration....: Linear
Spectrum in logger.: None

```

```

Profile:      #1      #2      #3
Detector:     1.0s    1.0s    1.0s

```

----- RESULTS -----

Measurement time: 00:01:00



```

Prof.:      #1          #2          #3
PEAK        813 mm/s2    767 mm/s2    653 mm/s2
P-P         1.57 m/s2    1.38 m/s2    1.14 m/s2
MAX         412 mm/s2    266 mm/s2    160 mm/s2
RMS         151 mm/s2    100 mm/s2    58.9 mm/s2
VDV         653 mm/s1.75 442 mm/s1.75 292 mm/s1.75

--- 1/3 OCTAVE --          --- 1/3 OCTAVE --          --- 1/3 OCTAVE --

    [Hz]    [m/s2]          [Hz]    [m/s2]          [Hz]    [m/s2]
    0.80    4.90e-02        25.00    7.50e-03        800.00    3.16e-03
    1.00    5.82e-02        31.50    1.72e-02        1000.00    3.02e-03
    1.25    6.17e-02        40.00    1.15e-02        1250.00    2.79e-03
    1.60    8.32e-02        50.00    9.02e-03        1600.00    2.66e-03
    2.00    5.89e-02        63.00    6.46e-03        2000.00    1.93e-03
    2.50    5.07e-02        80.00    4.27e-03        2500.00    1.30e-03
    3.15    3.98e-02        100.00    5.19e-03        3150.00    1.01e-03
    4.00    3.35e-02        125.00    5.82e-03        4000.00    8.32e-04
    5.00    3.72e-02        160.00    3.76e-03        5000.00    7.50e-04
    6.30    2.63e-02        200.00    7.24e-03        6300.00    5.69e-04
    8.00    2.37e-02        250.00    5.96e-03        8000.00    4.62e-04
   10.00    3.13e-02        315.00    4.95e-03       10000.00    3.98e-04
   12.50    2.79e-02        400.00    4.62e-03       12500.00    3.55e-04
   16.00    1.05e-02        500.00    5.82e-03       16000.00    3.16e-04
   20.00    6.84e-03        630.00    3.39e-03       20000.00    3.59e-04



----- TOTALS FOR FILTERS -----

Filter Type  CF[dB]    Total
R3          Acc      0.0    1.78e-01 m/s2
HP3          Acc      0.0    1.00e-01 m/s2
HP10         Acc      0.0    5.89e-02 m/s2

```

#### Example of the printed results from the VIBRATION METER mode (1/3 OCTAVE) - A4 format

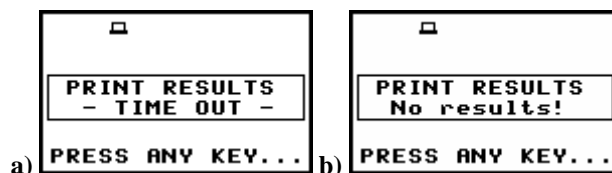
The following confirmation question is displayed after the printing, if the **Prompt** parameter was selected in the **EJECT P.** (path: *MENU / REPORT / OPTIONS / EJECT P.*). The user has to answer in this case if the paper in the printer has to be ejected to the new page. The change of the available answers is possible after pressing the <<>, <>> push-buttons. The return to the **REPORT** list is performed after pressing the <ENTER> push-button with the possible ejection of the paper to the new page.

<div style="text-align: center;">   <b>PRINTING...</b> </div> <hr/> <div style="text-align: center;"> Eject page?  YES </div>	<div style="text-align: center;">   <b>PRINTING...</b> </div> <hr/> <div style="text-align: center;"> Eject page?  NO </div>
--	---

Displays with the confirmation request of the paper ejection

The similar message is displayed after sending out the statistics of the results, the contents of the selected file, the contents of the selected file in the logger and the catalogue of the files (**PRINT STATISTICS**, **PRINT FILE**, **PRINT LOGGER**, **PRINT USER FILTERS** and **PRINT CATALOGUE**).

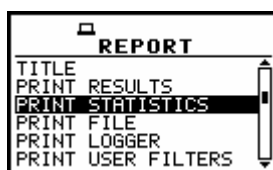
The message about the time limit is displayed in the case when the printer (or a PC) is not connected or there is any other reason that it does not receive the data. The instrument waits for the reaction of the user (any push-button should be pressed except the <SHIFT> and <ALT> one) and after pressing a push-button it returns to the **REPORT** list. Another message is presented and the instrument waits for the reaction of the user in the case when there is no data to be printed.



Displays during the results printing when there is no transfer (a) and no data (b)

### 8.3 Printing of the statistics of sound measurement results - PRINT STATISTICS

The **PRINT STATISTICS** enables the user to print the results of the statistics analysis on the attached printer. This position is not accessible for the vibration measurements. In order to enter the position the user has to select the **PRINT STATISTICS** text in the **REPORT** list, using the <▲>, <▼> (or <◀>, <▶>) push-buttons and press the <ENTER>.



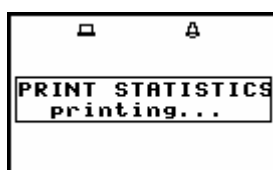
**REPORT** window with the **PRINT STATISTICS** selected

After pressing the <ENTER> push-button the instrument checks its current state. In the case when the measurements are performed, the printing is impossible and the message is displayed.



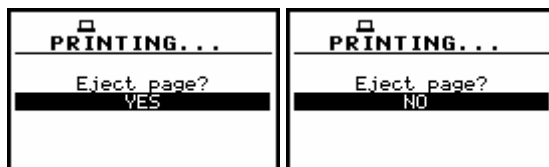
Display after the attempt to perform an unavailable operation during measurement in progress

After pressing the <ENTER> push-button, in the case when a measurement was already performed and a result is available, the message is displayed:



Display in the **REPORT** list; the execution of the **PRINT STATISTICS**

When the message is on the display, the data are transferred from the instrument to the attached printer (or PC). The instrument returns to the **REPORT** list when all data are transferred but if the **Prompt** parameter was selected in the **EJECT P.** (*path: MENU / REPORT / OPTIONS / EJECT P.*), the confirmation question is displayed after the printing. The user has to answer in this case if the paper in the printer has to be ejected to the new page. The change of the available answers is possible after pressing the <◀>, <▶> push-buttons. The return to the **REPORT** list is performed after pressing the <ENTER> push-button with the possible ejection of the paper to the new page.



**Displays with the confirmation request of the paper ejection**

The printed statistics examples (format A5 and A4) are presented below:

(C) SVANTEK      G7      No.12800			
2007/08/03      (v6.06/6.06.2)      13:27:14			
TITLE:			
----- SETTINGS -----			
Device mode.....: SOUND METER			
Input.....: Microphone			
Field correction...: FREE			
Outdoor filter.....: Off			
Device function....: LEVEL METER			
LEVEL METER version: 6.06			
Meas. start date...: 2007/08/03			
Meas. start hour...: 13:09:54			
Range.....: LOW			
Measure trigger....: Off			
Logger trigger.....: Off			
Repeat cycle.....: 1			
Start delay.....: 1 s			
Integration time...: 1 m			
Calibr. factor.....: 6.6 dB			
Calibration by.....: Measurement			
Calibration date...: 2007/08/03			
Calibration hour...: 12:39:58			
Leq integration.....: Linear			
Profile:      #1      #2      #3			
Filter:      A      C      Z			
Detector:      FAST      FAST      FAST			
Logger:      None      None      None			
----- STATISTICS -----			
Measurement time: 00:01:00			
Profile:      #1      #2      #3			
	[dB A]	[dB C]	[dB]
L01	52.6	62.3	87.0
L02	50.6	60.2	85.5
L03	49.4	59.1	84.0
L04	48.0	58.6	83.3
L05	47.3	58.3	82.7
L06	46.8	57.8	82.1
L07	46.5	57.0	81.5
L08	46.3	56.7	80.9
L09	46.0	56.4	80.3
L10	45.8	56.1	79.7
L11	45.7	55.9	79.3
L12	45.5	55.7	78.8
L13	45.4	55.5	78.5
L14	45.2	55.3	78.1
L15	45.1	55.1	77.8
L16	44.9	54.9	77.5
L17	44.8	54.8	77.2
L18	44.7	54.7	77.0
L19	44.6	54.6	76.5
L20	44.5	54.5	76.1
L21	44.4	54.4	75.8

L22	44.3	54.3	75.6
L23	44.2	54.2	75.4
L24	44.1	54.1	75.1
L25	44.0	54.0	74.9
L26	43.9	53.8	74.7
L27	43.9	53.7	74.5
L28	43.8	53.6	74.3
L29	43.8	53.5	74.1
L30	43.7	53.4	74.0
L31	43.6	53.3	73.7
L32	43.6	53.2	73.5
L33	43.5	53.1	73.3
L34	43.5	53.0	73.1
L35	43.4	52.9	72.9
L36	43.3	52.8	72.7
L37	43.3	52.7	72.4
L38	43.2	52.6	72.2
L39	43.2	52.6	72.0
L40	43.1	52.5	71.7
L41	43.0	52.4	71.4
L42	43.0	52.3	71.1
L43	42.9	52.2	70.8
L44	42.9	52.1	70.5
L45	42.8	52.0	70.2
L46	42.8	51.9	69.9
L47	42.7	51.9	69.7
L48	42.6	51.8	69.6
L49	42.6	51.7	69.4
L50	42.5	51.6	69.2
L51	42.5	51.5	69.0
L52	42.4	51.5	68.7
L53	42.4	51.4	68.3
L54	42.3	51.3	67.9
L55	42.3	51.2	67.7
L56	42.2	51.1	67.5
L57	42.2	51.1	67.2
L58	42.1	51.0	67.0
L59	42.0	50.9	66.8
L60	42.0	50.9	66.5
L61	41.9	50.8	66.2
L62	41.9	50.7	65.9
L63	41.8	50.7	65.5
L64	41.8	50.6	65.2
L65	41.7	50.5	64.9
L66	41.6	50.5	64.6
L67	41.6	50.4	64.3
L68	41.5	50.4	64.1
L69	41.5	50.3	63.8
L70	41.4	50.2	63.5
L71	41.3	50.2	63.3
L72	41.3	50.1	63.0
L73	41.2	50.0	62.7
L74	41.2	50.0	62.4
L75	41.1	49.9	62.1
L76	41.1	49.8	61.8
L77	41.0	49.7	61.5
L78	40.9	49.7	61.2
L79	40.9	49.6	60.9
L80	40.8	49.5	60.6
L81	40.7	49.4	60.4
L82	40.6	49.3	60.1
L83	40.5	49.2	59.9
L84	40.4	49.1	59.7
L85	40.3	49.1	59.5
L86	40.3	49.0	59.3
L87	40.2	48.8	59.1
L88	40.1	48.7	58.8
L89	40.0	48.5	58.5
L90	39.8	48.3	58.2
L91	39.6	48.2	57.8
L92	39.4	48.0	57.5
L93	39.1	47.8	57.1

---

### Example of the printed statistics from the SOUND LEVEL METER mode - format A5

```

(C) SVANTEK          G7          No.12800 2007/08/03          (v6.06/6.06.2)          14:05:39

TITLE:

----- SETTINGS -----

Device mode.....: SOUND METER
Input.....: Microphone
Field correction...: FREE
Device function....: DOSE METER
Meas. start date...: 2007/08/03
Range.....: LOW
Threshold level....: None
Exposure time.....: 08h00
Logger trigger.....: Off
Start delay.....: 1 s
Calibr. factor.....: 6.6 dB
Calibration date...: 2007/08/03
Leq integration....: Linear

Profile:      #1      #2      #3
Filter:       A       C       Z
Logger:      None    None    None

----- STATISTICS -----

Measurement time: 00:00:30

Profile:      #1      #2      #3
              [dB A] [dB C] [dB]
L01          56.5    59.9    71.0
L02          55.8    59.6    70.2
L03          55.5    59.3    69.3
L04          55.2    59.0    68.7
L05          54.9    58.8    68.3
L06          54.6    58.7    68.0
L07          54.3    58.6    67.4
L08          54.0    58.5    66.9
L09          53.8    58.3    66.7
L10          53.7    58.2    66.5
L11          53.5    58.1    66.3
L12          53.4    58.0    66.1
L13          53.2    57.9    65.9
L14          53.1    57.8    65.7
L15          52.9    57.7    65.6
L16          52.8    57.6    65.4
L17          52.7    57.5    65.3
L18          52.6    57.4    65.1
L19          52.4    57.3    65.0
L20          52.3    57.2    64.8
L21          52.2    57.2    64.7
L22          52.1    57.1    64.5
L23          52.0    57.0    64.4
L24          51.8    56.9    64.2
L25          51.6    56.8    64.1
L26          51.5    56.7    63.9
L27          51.3    56.7    63.8
L28          51.2    56.6    63.7
L29          51.0    56.5    63.6

Outdoor filter.....: Off
Meas. start hour...: 14:03:56
Criterion level....: 80 dB
Exchange rate.....: 3 dB
Measure trigger....: Off
Repeat cycle.....: 1
Integration time...: 30 s
Calibration by.....: Measurement
Calibration hour...: 12:39:58

Profile:      #1      #2      #3
Detector:     FAST    FAST    FAST

----- STATISTICS -----

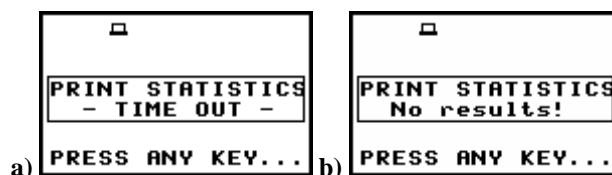
Profile:      #1      #2      #3
              [dB A] [dB C] [dB]
L51          48.7    54.8    61.3
L52          48.6    54.7    61.3
L53          48.5    54.7    61.2
L54          48.5    54.6    61.1
L55          48.4    54.5    61.0
L56          48.3    54.5    61.0
L57          48.3    54.4    60.9
L58          48.2    54.3    60.8
L59          48.1    54.2    60.7
L60          48.1    54.2    60.6
L61          48.0    54.1    60.5
L62          47.9    54.0    60.4
L63          47.8    54.0    60.3
L64          47.8    53.9    60.2
L65          47.7    53.8    60.1
L66          47.6    53.7    60.0
L67          47.5    53.6    59.9
L68          47.5    53.5    59.8
L69          47.4    53.4    59.7
L70          47.3    53.3    59.7
L71          47.2    53.3    59.6
L72          47.1    53.2    59.5
L73          47.1    53.1    59.4
L74          47.0    53.0    59.3
L75          46.9    52.9    59.3
L76          46.8    52.8    59.2
L77          46.8    52.8    59.1
L78          46.7    52.7    59.0
L79          46.6    52.6    59.0

```

L30	50.9	56.4	63.5	L80	46.5	52.6	58.8
L31	50.8	56.3	63.4	L81	46.5	52.5	58.7
L32	50.7	56.3	63.3	L82	46.4	52.4	58.5
L33	50.6	56.2	63.2	L83	46.3	52.4	58.4
L34	50.5	56.1	63.1	L84	46.3	52.3	58.2
L35	50.4	56.0	63.0	L85	46.2	52.2	58.1
L36	50.3	56.0	62.8	L86	46.1	52.2	58.0
L37	50.2	55.9	62.7	L87	46.0	52.1	57.8
L38	50.1	55.8	62.6	L88	46.0	52.0	57.6
L39	50.0	55.7	62.5	L89	45.9	52.0	57.4
L40	49.8	55.6	62.3	L90	45.7	51.8	57.2
L41	49.7	55.6	62.2	L91	45.6	51.7	57.0
L42	49.6	55.5	62.1	L92	45.5	51.6	56.7
L43	49.5	55.4	62.0	L93	45.3	51.5	56.5
L44	49.3	55.3	61.9	L94	45.2	51.3	56.2
L45	49.2	55.2	61.8	L95	45.1	51.2	56.0
L46	49.1	55.2	61.7	L96	45.0	51.1	55.6
L47	49.0	55.1	61.6	L97	44.6	51.0	55.2
L48	48.9	55.0	61.6	L98	44.2	50.6	54.8
L49	48.8	54.9	61.5	L99	43.6	50.2	54.4
L50	48.7	54.9	61.4				

Example of the printed statistics from the SOUND METER mode (DOSE METER) - format A4

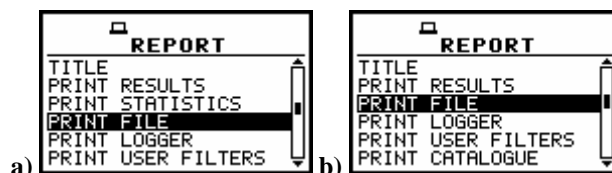
The message about the time limit is displayed in the case when the printer is not connected or there is any other reason that it does not receive the data. The instrument waits for the reaction of the user (any push-button should be pressed except the **<SHIFT>** and **<ALT>**) and after pressing a push-button it returns to the **REPORT** list. Another message is presented and the instrument waits for the reaction of the user in the case when there is no data to be printed.



Displays during the statistics printing when there is no transfer (a) and no data (b)

## 8.4 Printing of the measurement results from the selected file - PRINT FILE

The **PRINT FILE** enables the user to print out on a printer connected directly to the instrument the selected file with the measurement results or to send it to a PC using SvanPC software and the USB interface. In order to enter the position the user has to select the **PRINT FILE** text in the **REPORT** list, using the **<▲>**, **<▼>** (or **<◀>**, **<▶>**) push buttons and press the **<ENTER>**.



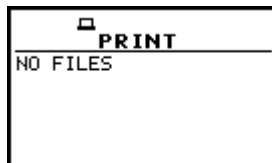
REPORT windows with the PRINT FILE selected in SM (a) and VM (b)

After pressing the **<ENTER>** push-button the instrument checks its current state. In the case when the measurements are performed, the printing is impossible and the message is displayed.



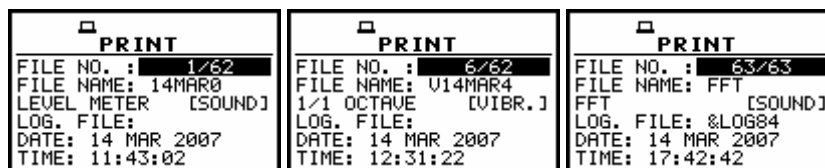
Display after the attempt to perform an unavailable operation during measurement in progress

If no files were saved in the instrument's memory then after pressing **<ENTER>** a special message is displayed and the unit waits for the reaction of the user. In this time any push-button should be pressed except the **<SHIFT>** and **<ALT>** one and after pressing a push-button the instrument returns to the **REPORT** list.



Display in the **REPORT** list; the **PRINT FILE** position when no files were saved

In the consecutive lines of the display the current file number, the total number of the files, the file name, file type, date and time of registration are presented. The change of the current file with the unit step can be done pressing the **<◀>**, **<▶>** push-buttons. After pressing the **<◀>** with **<SHIFT>** push-button the first file is available and after pressing the **<▶>** with **<SHIFT>** push-button - the last one is displayed.



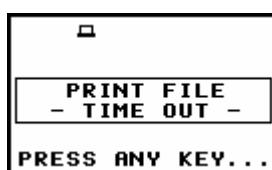
Displays during the selection of the file to be printed

The contents of the selected file is sent out to a PC after pressing the **<ENTER>** push-button. The following message is displayed on the display during the printing:



Display during the execution of the **PRINT FILE** operation

The instrument returns to the **REPORT** list when all data are transferred but if the **Prompt** parameter was selected (*path: MENU / REPORTS / OPTIONS / EJECT P. / Prompt*), the described in the **PRINT RESULTS** message is displayed on the display after the printing. The user has to answer in this case if the Line Feed has to be added to the transferred data. The change of the available answers is possible after pressing the **<◀>**, **<▶>** push-buttons. The return to the **REPORT** list is performed after pressing the **<ENTER>** push-button with the possible Line Feed addition.



Display during the file sending out when there is no data transfer

The message about the time limit is displayed in the case when the printer (or PC) is not connected or there is any other reason that it does not receive the data. The instrument waits for the reaction of the user (any push-button should be pressed except the <SHIFT> and <ALT> one) and it returns to the **REPORT** list after pressing a push-button.

The exemplary printed file contents are presented below.

```
(C) SVANTEK      G7      No.12800
2007/08/06      (v6.06/6.06.2)  17:55:35

File name: 06AUG0

TITLE:

----- SETTINGS -----

Device mode.....: VIBR. METER
Input.....: Accelerometer
Device function....: 1/3 OCTAVE
Meas. start date...: 2007/08/06
Meas. start hour...: 17:52:52
Range.....: HIGH
Ref.level for Acc..: 1 um/s2
Ref.level for Vel...: 1 nm/s
Ref.level for Dil...: 1 pm
Measure trigger....: Off
Logger trigger.....: Off
Repeat cycle.....: 1
Start delay.....: 1 s
Integration time...: 30 s
Calibr. factor.....: 0.0 dB
RMS integration....: Linear
Spectrum filter....: Z
Spectrum in logger.: None

Profile:      #1      #2      #3
Filter:      HP1      HP3      HP10
Detector:    1.0s    1.0s    1.0s
Logger:      None    None    None

----- RESULTS -----

Measurement time: 00:00:30

Prof.:      #1      #2      #3
PEAK      794mm/s2    525mm/s2    543mm/s2
P-P      1.36 m/s2    1.00 m/s2    989mm/s2
MAX      282mm/s2    150mm/s2    79.4mm/s2
RMS      122mm/s2    93.3mm/s2    62.4mm/s2
VDV      442mm/sX    305mm/sX    204mm/sX

Remark:  X = 1.75

--- 1/3 OCTAVE ---

      [Hz]    [m/s2]
      0.80    2.04e-02
      1.00    3.98e-02
      1.25    4.68e-02
      1.60    3.98e-02
      2.00    2.88e-02
      2.50    2.32e-02
      3.15    3.02e-02
      4.00    3.16e-02
      5.00    4.03e-02
      6.30    1.70e-02
      8.00    2.79e-02
     10.00    1.38e-02
     12.50    2.85e-02
```



```

16.00 1.00e-02
20.00 6.24e-03
25.00 6.76e-03
31.50 2.16e-02
40.00 1.95e-02
50.00 9.89e-03
63.00 6.76e-03
80.00 4.42e-03
100.00 1.07e-02
125.00 8.71e-03
160.00 5.69e-03
200.00 1.16e-02
250.00 1.12e-02
315.00 6.76e-03
400.00 6.76e-03
500.00 7.76e-03
630.00 5.56e-03
800.00 4.32e-03
1000.00 4.42e-03
1250.00 4.27e-03
1600.00 3.47e-03
2000.00 2.29e-03
2500.00 1.91e-03
3150.00 1.29e-03
4000.00 1.20e-03
5000.00 1.68e-03
6300.00 1.16e-03
8000.00 1.26e-03
10000.00 1.70e-03
12500.00 1.57e-03
16000.00 1.91e-03
20000.00 2.02e-03

----- TOTALS FOR FILTERS -----

Filter Type  CF[dB]    Total
HP1      Acc      0.0    1.32e-01 m/s2
HP3      Acc      0.0    9.33e-02 m/s2
HP10     Acc      0.0    6.24e-02 m/s2

```

**Example of the printed file from the VIBRATION METER mode (1/3 OCTAVE) - format A5**

(C) SVANTEK      G7      No.12800 2007/08/06      (v6.06/6.06.2)      17:57:59

File name: 03AUGST

TITLE:

----- SETTINGS -----

Device mode.....: SOUND METER  
Input.....: Microphone  
Field correction...: FREE  
Device function....: LEVEL METER  
Meas. start date...: 2007/08/03  
Range.....: LOW  
Logger trigger.....: Off  
Start delay.....: 1 s  
Calibr. factor.....: 6.6 dB  
Calibration date...: 2007/08/03  
Leq integration....: Linear

----- SETTINGS -----

Outdoor filter.....: Off  
LEVEL METER version: 6.06  
Meas. start hour...: 13:09:54  
Measure trigger....: Off  
Repeat cycle.....: 1  
Integration time...: 1 m  
Calibration by.....: Measurement  
Calibration hour...: 12:39:58

Profile:      #1      #2      #3  
Filter:        A      C      Z  
Logger:        None   None   None

Profile:      #1      #2      #3  
Detector:     FAST   FAST   FAST

----- RESULTS -----

Measurement time: 00:01:00

Prof.:	#1	#2	#3
PEAK	76.1 dB	75.9 dB	92.7 dB
MAX	60.0 dB	64.6 dB	89.7 dB
MIN	34.8 dB	44.7 dB	53.6 dB
SPL	47.5 dB	60.0 dB	72.7 dB
LEQ	44.3 dB	53.5 dB	76.0 dB
SEL	62.1 dB	71.3 dB	93.8 dB
Ld	44.3 dB	53.5 dB	76.0 dB
LEPd	44.3 dB	53.5 dB	76.0 dB
Ltm3	50.5 dB	57.9 dB	82.7 dB
Ltm5	52.2 dB	59.6 dB	82.7 dB
L01	52.6 dB	62.3 dB	87.0 dB
L10	45.8 dB	56.1 dB	79.7 dB
L20	44.5 dB	54.5 dB	76.1 dB
L30	43.7 dB	53.4 dB	74.0 dB
L40	43.1 dB	52.5 dB	71.7 dB
L50	42.5 dB	51.6 dB	69.2 dB
L60	42.0 dB	50.9 dB	66.5 dB
L70	41.4 dB	50.2 dB	63.5 dB
L80	40.8 dB	49.5 dB	60.6 dB
L90	39.8 dB	48.3 dB	58.2 dB

----- STATISTICS -----

----- STATISTICS -----

Measurement time: 00:01:00

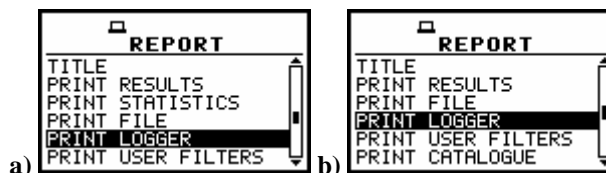
Profile:	#1	#2	#3	Profile:	#1	#2	#3
	[dB A]	[dB C]	[dB]		[dB A]	[dB C]	[dB]
L01	52.6	62.3	87.0	L51	42.5	51.5	69.0
L02	50.6	60.2	85.5	L52	42.4	51.5	68.7
L03	49.4	59.1	84.0	L53	42.4	51.4	68.3
L04	48.0	58.6	83.3	L54	42.3	51.3	67.9
L05	47.3	58.3	82.7	L55	42.3	51.2	67.7
L06	46.8	57.8	82.1	L56	42.2	51.1	67.5
L07	46.5	57.0	81.5	L57	42.2	51.1	67.2
L08	46.3	56.7	80.9	L58	42.1	51.0	67.0
L09	46.0	56.4	80.3	L59	42.0	50.9	66.8
L10	45.8	56.1	79.7	L60	42.0	50.9	66.5
L11	45.7	55.9	79.3	L61	41.9	50.8	66.2
L12	45.5	55.7	78.8	L62	41.9	50.7	65.9
L13	45.4	55.5	78.5	L63	41.8	50.7	65.5
L14	45.2	55.3	78.1	L64	41.8	50.6	65.2
L15	45.1	55.1	77.8	L65	41.7	50.5	64.9
L16	44.9	54.9	77.5	L66	41.6	50.5	64.6
L17	44.8	54.8	77.2	L67	41.6	50.4	64.3
L18	44.7	54.7	77.0	L68	41.5	50.4	64.1
L19	44.6	54.6	76.5	L69	41.5	50.3	63.8
L20	44.5	54.5	76.1	L70	41.4	50.2	63.5
L21	44.4	54.4	75.8	L71	41.3	50.2	63.3
L22	44.3	54.3	75.6	L72	41.3	50.1	63.0
L23	44.2	54.2	75.4	L73	41.2	50.0	62.7
L24	44.1	54.1	75.1	L74	41.2	50.0	62.4
L25	44.0	54.0	74.9	L75	41.1	49.9	62.1
L26	43.9	53.8	74.7	L76	41.1	49.8	61.8
L27	43.9	53.7	74.5	L77	41.0	49.7	61.5
L28	43.8	53.6	74.3	L78	40.9	49.7	61.2
L29	43.8	53.5	74.1	L79	40.9	49.6	60.9
L30	43.7	53.4	74.0	L80	40.8	49.5	60.6
L31	43.6	53.3	73.7	L81	40.7	49.4	60.4
L32	43.6	53.2	73.5	L82	40.6	49.3	60.1
L33	43.5	53.1	73.3	L83	40.5	49.2	59.9
L34	43.5	53.0	73.1	L84	40.4	49.1	59.7
L35	43.4	52.9	72.9	L85	40.3	49.1	59.5
L36	43.3	52.8	72.7	L86	40.3	49.0	59.3
L37	43.3	52.7	72.4	L87	40.2	48.8	59.1
L38	43.2	52.6	72.2	L88	40.1	48.7	58.8
L39	43.2	52.6	72.0	L89	40.0	48.5	58.5
L40	43.1	52.5	71.7	L90	39.8	48.3	58.2
L41	43.0	52.4	71.4	L91	39.6	48.2	57.8

L42	43.0	52.3	71.1	L92	39.4	48.0	57.5
L43	42.9	52.2	70.8	L93	39.1	47.8	57.1
L44	42.9	52.1	70.5	L94	38.6	47.6	56.7
L45	42.8	52.0	70.2	L95	37.3	47.4	56.2
L46	42.8	51.9	69.9	L96	35.9	47.2	55.7
L47	42.7	51.9	69.7	L97	35.6	47.0	55.1
L48	42.6	51.8	69.6	L98	35.4	46.3	54.6
L49	42.6	51.7	69.4	L99	35.1	45.4	54.0
L50	42.5	51.6	69.2				

Example of the printed file from the SOUND METER mode (LEVEL METER) - format A4

## 8.5 Printing of the logger results - PRINT LOGGER

The **PRINT LOGGER** enables the user to print out on a printer connected directly to the instrument the measurement results in a selected file from the logger or to send them to a PC using SvanPC software and USB interface. In order to enter the position the user has to select the **PRINT LOGGER** text in the **REPORT** list, using the <▲>, <▼> (or <◀>, <▶>) push buttons and press the <ENTER>. This option is under development - **Function not available** text appears on the display.



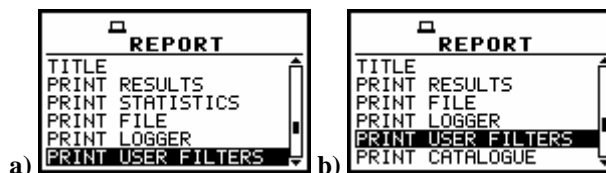
REPORT windows with the PRINT LOGGER selected in SM (a) and VM (b)



PRINT LOGGER window opened - Function not available message

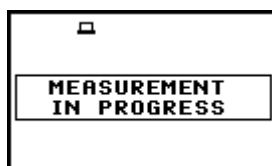
## 8.6 Printing of the coefficients of the user filters - PRINT USER FILTERS

The **PRINT USER FILTERS** enables the user to print out the values of the user filters introduced in the instrument: **S1**, **S2**, **S3**.



REPORT windows with the PRINT USER FILTERS selected in SM and in VM

In order to enter the position the user has to select the **PRINT USER FILTERS** text in the **REPORT** list, using the <▲>, <▼> (or <◀>, <▶>) push buttons and press the <ENTER>. After pressing the <ENTER> push-button the instrument checks its current state. In the case when the measurements are performed, the printing is impossible and the message is displayed.



Display after the attempt to perform an unavailable operation during measurement in progress

The selection of the **USER FILTER** is made by means of the <<>, <>> push buttons.



PRINT USER FILTERS windows; the user filter selection

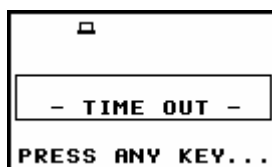
The contents of the selected file is sent out to the attached printer (or to a PC) after pressing the <ENTER> push-button. The following message is displayed on the display during the printing:



Display in the REPORT list; the execution of the PRINT USER FILTERS

When the message is on the display, the data are transferred from the instrument to the attached printer (or PC). The instrument returns to the **REPORT** list after transferring all data.

In the case when the printer or PC is not connected or there is any other reason that it does not receive the data the message about the time limit is displayed. The instrument waits for the reaction of the user (any push-button should be pressed except the <SHIFT> and <ALT>) and after pressing a push-button it returns to the **REPORT** list.



Display during the file transfer from the logger when there is no data transfer

The exemplary **USER FILTER** coefficients printed in A4 format look as follows:

(C) SVANTEK	G7	No.12800	2007/08/06	(v6.06/6.06.2)	17:59:59
Sound meter mode filter					
----- S1 -----		----- S1 -----		----- S1 -----	
[Hz]	[dB]	[Hz]	[dB]	[Hz]	[dB]
0.80	-INF	25.00	40.0	800.00	10.0
1.00	-100.0	31.50	50.0	1000.00	0.0
1.25	-90.0	40.00	60.0	1250.00	-10.0
1.60	-80.0	50.00	70.0	1600.00	-20.0
2.00	-70.0	63.00	80.0	2000.00	-30.0
2.50	-60.0	80.00	90.0	2500.00	-40.0

3.15	-50.0	100.00	100.0	3150.00	-50.0
4.00	-40.0	125.00	90.0	4000.00	-60.0
5.00	-30.0	160.00	80.0	5000.00	-70.0
6.30	-20.0	200.00	70.0	6300.00	-80.0
8.00	-10.0	250.00	60.0	8000.00	-90.0
10.00	0.0	315.00	50.0	10000.00	-100.0
12.50	10.0	400.00	40.0	12500.00	-INF
16.00	20.0	500.00	30.0	16000.00	-INF
20.00	30.0	630.00	20.0	20000.00	-INF

Example of the printed coefficients of the user filter S1- format A4

(C) SVANTEK

G7

No.12800

2007/08/06

(v6.06/6.06.2)

18:05:35

Sound meter mode filter

----- S2 -----

----- S2 -----

[Hz]	[dB]	[Hz]	[dB]
0.80	-INF	160.00	1.0
1.00	-INF	200.00	1.0
1.25	-INF	250.00	1.0
1.60	-INF	315.00	3.0
2.00	0.0	400.00	3.0
2.50	0.0	500.00	3.0
3.15	0.0	630.00	1.0
4.00	0.0	800.00	1.0
5.00	0.0	1000.00	1.0
6.30	0.0	1250.00	1.0
8.00	0.0	1600.00	1.0
10.00	0.0	2000.00	0.0
12.50	0.0	2500.00	0.0
16.00	0.0	3150.00	0.0
20.00	0.0	4000.00	0.0
25.00	0.0	5000.00	0.0
31.50	0.0	6300.00	0.0
40.00	0.0	8000.00	0.0
50.00	0.0	10000.00	-INF
63.00	0.0	12500.00	-INF
80.00	0.0	16000.00	-INF
100.00	1.0	20000.00	-INF
125.00	0.0		

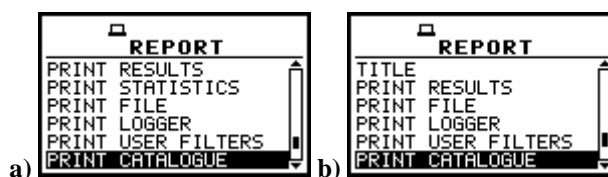
-----

-----

Example of the printed coefficients of the user filter S2 - format A5

## 8.7 Printing of the file's catalogue - PRINT CATALOGUE

The **PRINT CATALOGUE** enables the user to print the catalogue of the files stored in the instrument on the attached printer. In order to enter the position the user has to select the **PRINT CATALOGUE** text in the **REPORT** list, using the <▲>, <▼> (or <◀>, <▶>) push buttons and press the <ENTER>.



REPORT windows with the PRINT CATALOGUE selected in SM (a) and VM (b)

After pressing the **<ENTER>** push-button the instrument checks its current state. In the case when the measurements are performed, the printing is impossible and the message is displayed.



**Display after the attempt to perform an unavailable operation during measurement in progress**

After pressing the **<ENTER>** push-button the following message is displayed:

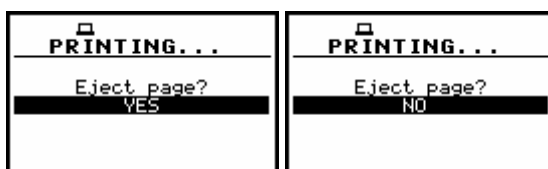


**Display in the REPORT list; the execution of the PRINT CATALOGUE**

When the message is on the display, the data are transferred from the instrument to the attached printer.

The instrument returns to the **REPORT** list after transferring all data but if the **Prompt** parameter was selected in the **EJECT P.** (*path: MENU / REPORT / OPTIONS / EJECT P.*), the confirmation question is displayed after the printing. The user has to answer in this case if the paper in the printer has to be ejected to the new page. The change of the available answers is possible after pressing the **<←>**, **<→>** push-buttons.

The return to the **REPORT** list is performed after pressing the **<ENTER>** push-button with the possible ejection of the paper to the new page.



**Displays with the confirmation request of the paper ejection**

The exemplary printed catalogue is presented below.

(C) SVANTEK		G7	No.12800		2007/08/06	(v6.06/6.06.2)		18:04:18	
CATALOGUE CONTENTS					Number of files: 5				
Name	Mf	Length	Date	Time	Name	Mf	Length	Date	Time
03AUG0	<S1>	466	07/08/03	12:42	03AUG0CT	<Vt>	486	07/08/03	12:50
03AUGST	<S1>	1946	07/08/03	13:11	03AUGDOS	<Sd>	1946	07/08/03	14:05
06AUG0	<Vt>	486	07/08/06	17:53					
-----									

**Example of the printed catalogue - format A4**

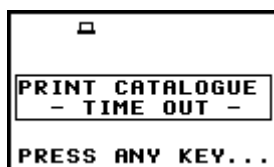
The same catalogue printed in A5 format looks as follows:

(C) SVANTEK	G7	No.12800		
2007/08/06	(v6.06/6.06.2)	18:05:38		
CATALOGUE CONTENTS				
Number of files: 5				
Name	Mf	Length	Date	Time
03AUG0	<Sl>	466	07/08/03	12:42
03AUG0CT	<Vt>	486	07/08/03	12:50
03AUGST	<Sl>	1946	07/08/03	13:11
03AUGDOS	<Sd>	1946	07/08/03	14:05
06AUG0	<Vt>	486	07/08/06	17:53

-----

Example of the printed catalogue - format A5

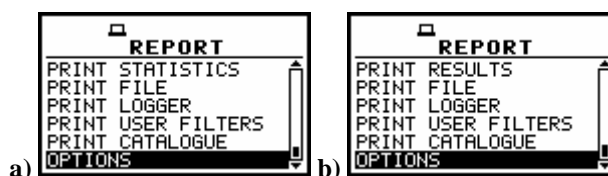
When the catalogue of the files is empty (the measurement results were not saved), the instrument returns to the **REPORT** list without any reaction.



Display during the catalogue printing when there is no data transfer

## 8.8 Selection of the printing options - OPTIONS

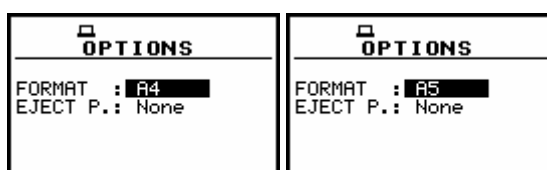
Using the **OPTIONS** the user can select the format of the listing (**FORMAT**), can control the way the paper is ejected in the printer (**EJECT P.**). In order to enter the position the user has to select the **OPTIONS** text in the **REPORT** list, using the <▲>, <▼> (or <◀>, <▶>) push-buttons and press the <ENTER>.



REPORT windows with the OPTION selected in SM (a) and in VM (b)

## 8.9 Selection of the format of the print out - FORMAT

The **FORMAT** enables the user to select the format of the listing (**A4** and **A5** options are available). In order to confirm the selection the <ENTER> push-button has to be pressed. After this confirmation, the **OPTIONS** sub-list is closed. In order to ignore any changes made in the **OPTIONS** sub-list the user has to press the <ESC> push-button.



OPTIONS windows; the selection of the format

## 8.10 Controlling the paper ejection after print out - EJECT P.

The **EJECT P.** enables the user to control the ejection of the paper after the listing is done. The following options are available: **Prompt** (the instrument asks whether to eject the page after printing report, statistics or catalogue), **Auto** (after printing, the paper is ejected) and **None** (the paper is not ejected after printing). In particular, it is possible to have one result after another using the **None** or **Prompt** options.

In the **EJECT P.** position any change is performed by means of the <◀>, <▶> push-buttons. In order to confirm the selection the <ENTER> push-button has to be pressed. After this confirmation, the **OPTIONS** sub-list is closed. In order to ignore any changes made in the **OPTIONS** sub-list the user has to press the <ESC> push-button.

OPTIONS	OPTIONS	OPTIONS
FORMAT : A4 EJECT P.: None	FORMAT : A4 EJECT P.: Prompt	FORMAT : A4 EJECT P.: Auto

OPTIONS windows; the selection of the paper ejection

The request is displayed after the printing of the measurement results, the statistics of the results, the contents of the selected file, the contents of the selected file in the logger and the catalogue of the files (**PRINT RESULTS**, **PRINT STATISTICS**, **PRINT FILE**, **PRINT LOGGER**, **PRINT USER FILTERS**, **PRINT CATALOGUE**) if the **Prompt** parameter was selected in the **EJECT P.** position of the **OPTIONS** sub-list. The user has to answer in this case if the paper in the printer has to be ejected to the new page. The change of the available answers is possible after pressing the <◀>, <▶> push-buttons. The return to the **REPORT** list is performed after pressing the <ENTER> push-button with the possible ejection of the paper to the new page.

PRINTING...	PRINTING...
Eject page? YES	Eject page? NO

Displays with the request for the confirmation of the paper ejection

The message about the time limit is displayed in the case when the printer is not connected or there is any other reason that it does not eject a paper. The instrument waits for the reaction of the user (any push-button should be pressed except the <SHIFT> one) and after pressing a push-button it returns to the **REPORT** list.

EJECT PAGE - TIME OUT -
PRESS ANY KEY...

Display after a printing when there is not possible to eject a paper



## 9 SETUP MENU - SETUP

The **SETUP** list contains different sub-lists and positions. Some of them are directly related with sound or vibration measurements, and some - with the settings of the hardware components of the instrument. In order to open the **SETUP** list the user has to:

- press the **<MENU>** push-button,
- select from the main list, using the **<▲>**, **<▼>** (or **<◀>**, **<▶>**) push-buttons, the **SETUP** text (highlight it inversely),
- press the **<ENTER>** push-button.



Display in the main list; the **SETUP** text highlighted (displayed inversely)

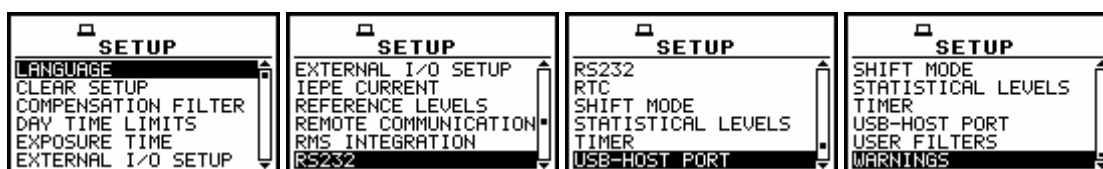
In the **SETUP** list, the following items are available:

<b>LANGUAGE</b>	it enables the user to set language of the user interface.
<b>CLEAR SETUP</b>	it enables the user to return to the default, factory setup.
<b>COMPENSATION FILTER</b>	it enables the user to set the type of compensation filter for sound measurements. This position is taken off from the menu in the vibration meter mode
<b>DAY TIME LIMITS</b>	it enables the user to select the hours limiting day and night for the calculation of the <b>Lden</b> result. This position is taken off from the menu in the vibration meter mode.
<b>EXPOSURE TIME</b>	it enables the user to define the exposure time used for the <b>LEPd</b> measurement and other <b>DOSE METER</b> results. This position is taken off from the menu in the vibration meter mode.
<b>EXTERNAL I/O SETUP</b>	it enables the user to select the available functionality of the <b>Ext. I/O</b> port.
<b>HUMAN VIB. FILT.</b>	it enables the user to activate <b>HUMAN VIBRATION FILTERS</b> . This position appears only in vibration mode before activation of those filters.
<b>IEPE CURRENT</b>	it enables the user to choose current IEPE supply.
<b>REFERENCE LEVELS</b>	it enables the user to select the reference level for the vibration measurements and it informs the user about the reference level in the sound measurements.
<b>REMOTE COMMUNICATION</b>	it enables the user to select the type of remote communication and packet size for data transmission.
<b>RMS INTEGRATION</b>	it enables the user to select the way of integration for the "family" of the <b>LEQ</b> measurements.
<b>RS232</b>	it enables the user to set the transmission speed and the timeout in the RS232 interface.
<b>RTC</b>	it enables the user to set the <b>Real Time Clock</b> .
<b>RT60 AVERAGING</b>	this position appears only in <b>RT60</b> mode it enables the user to switch on and reset averaging and it informs the user how many measurement were taken to the averaging process calculation
<b>RT60 OPTIONS</b>	context position (appears only in case of <b>RT60</b> measurements) it enables the user to set the auxiliary parameters of RT 60 mode
<b>RT60 RESULTS</b>	this position appears only in case of <b>RT60</b> mode, it enables the user set which of the reverberation time results ( <b>EDT</b> , <b>RT20</b> , <b>RT30</b> ) will be presented in the visualization levels to each 1/3 octave band:
<b>SHIFT MODE</b>	it enables the user to set the operating mode of the <b>&lt;SHIFT&gt;</b> and the <b>&lt;START / STOP&gt;</b> push-buttons.

<b>STATISTICAL LEVELS</b>	it enables the user to select ten statistic levels to be displayed in one profile and 3 PROFILES modes and saved in the files with the main results. This position is taken off from the menu in the vibration meter mode.
<b>TIMER</b>	it enables the user to set the Timer function.
<b>USB-HOST PORT</b>	it enables the user to select the available functionality of the <b>USB Host</b> port.
<b>USER FILTERS</b>	it enables the user to select and set the correcting values for all real-time and 1/1 and 1/3 octave filters.
<b>VIBRATION UNITS</b>	it enables the user to select the vibration units in which the results of the measurements are to be given. This position is taken off from the menu in the sound meter mode.
<b>WARNINGS</b>	it enables the user to switch on or off the warnings that can be displayed during the operation of the instrument.

Pressing the **<SHIFT>** and **<▲>** (or **<SHIFT>** and **<◀>**) push-buttons results in a movement to the first position of the opened list and pressing the **<SHIFT>** and **<▼>** (or **<SHIFT>** and **<▶>**) – results in a movement to the last position of the opened list.

In each available position any change is performed by means of the **<◀>**, **<▶>** push-buttons. In order to confirm the selection the **<ENTER>** push-button has to be pressed. After this confirmation, the opened window or list is closed. In order to ignore any changes made in the opened window or list the user has to press the **<ESC>** push-button.



SETUP list in the SM



**Notice:** The abbreviation **SM** – **Sound Mode** refers to the sound mode (**SOUND METER**) and the proper functions dedicated for the measurement and analysis of the acoustic signal: **LEVEL METER**, **1/1 OCTAVE**, **1/3 OCTAVE**, **FFT**, **DOSIMETER** and **RT60**; **VM** – **Vibration Mode** refers to the vibration mode (**VIBRATION METER**) and the proper functions dedicated for the measurement and analysis of the vibration signal: **LEVEL METER**, **1/1 OCTAVE**, **1/3 OCTAVE** and **FFT**.



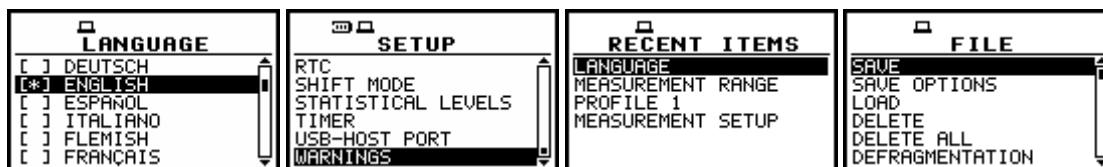
SETUP list in the VM

## 9.1 Setting the language of the user interface - LANGUAGE

The **LANGUAGE** enables one to select the language of the user interface. In order to enter the list one has to press the **<ENTER>** push-button on the inversely displayed **LANGUAGE** text of the **SETUP** list. The selection is made by placing a special character by means of the **<◀>**, **<▶>** push-buttons in the line with the selected language. Pressing the **<SHIFT>** and **<▲>** (or **<SHIFT>** and **<◀>**) push-buttons results in a movement to the first position of the opened list and pressing the **<SHIFT>** and **<▼>** (or **<SHIFT>** and **<▶>**) – results in a movement to the last position of the opened list. The selection is confirmed and the list is closed after pressing the **<ENTER>** push-button. The list is closed without any confirmation after pressing the **<ESC>** push-button.



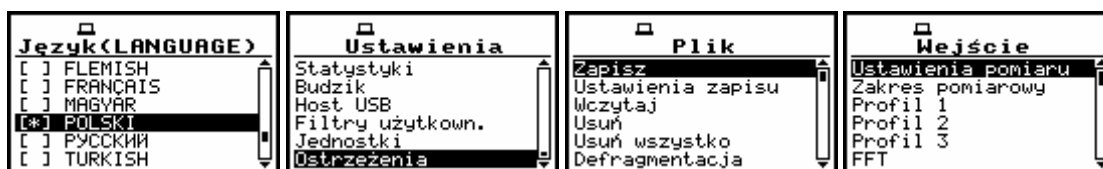
SETUP list; the LANGUAGE text highlighted (displayed inversely)



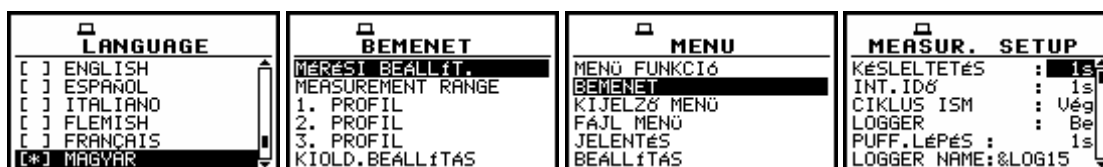
Displays with the English version of the user interface



Displays with the Italian version of the user interface



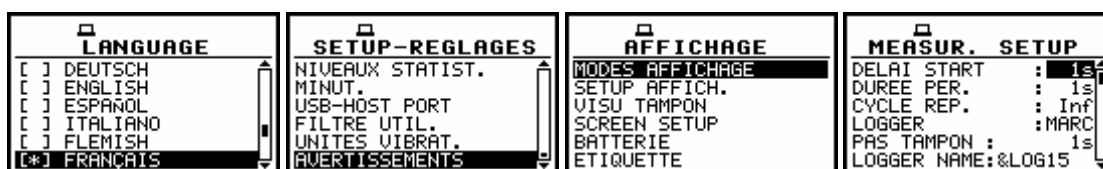
Displays with the Polish version of the user interface



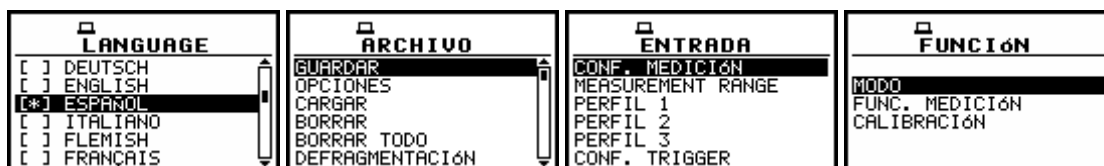
Displays with the Hungarian version of the user interface



Displays with the Flemish version of the user interface



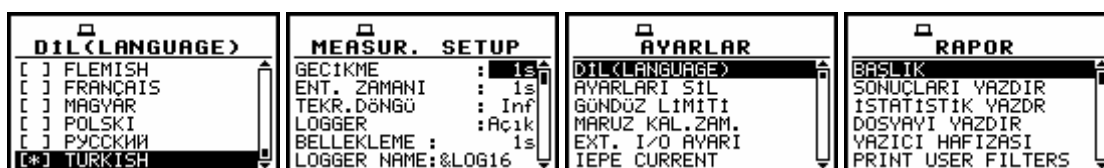
Displays with the French version of the user interface



Displays with the Spanish version of the user interface



Displays with the German version of the user interface



Displays with the Turkish version of the user interface

For activation of the Russian version of the user interface, the special code has to be entered.



Displays during the entering of the access code to the Russian version of the user interface



Displays with the Russian version of the user interface available only on some markets

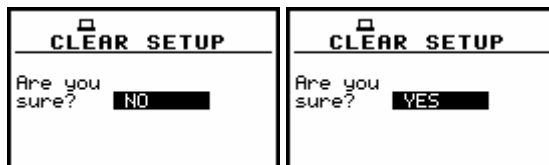
## 9.2 Return to the factory settings - CLEAR SETUP

The **CLEAR SETUP** enables the user to return to the default set up of the instrument. In order to enter the position the user has to select the **CLEAR SETUP** text in the **SETUP** list, using the <▲>, <▼> (or <◀>, <▶>) push-buttons and press the <ENTER>.



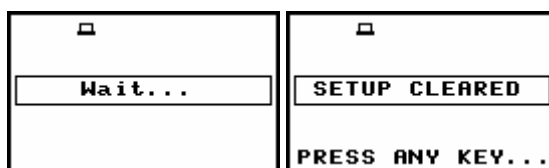
SETUP list; the CLEAR SETUP text highlighted (displayed inversely)

After entering this position, the request for the confirmation is displayed. The proper answer for the request is selected by means of the <<>, <>> push-buttons. The instrument returns to the default set up after pressing the <ENTER> push-button in the case when the answer **YES** was chosen.



Displays with the request for the confirmation for the **CLEAR SETUP** execution

During the clearing process the message **WAIT...** is displayed. The following message is displayed after the return to the default settings and the instrument waits for the user's reaction.



Displays during and after the execution of the **CLEAR SETUP** function

The window is closed and the instrument returns to the **SETUP** list after pressing any push-button with an exception of the <SHIFT> and the <ALT> one.

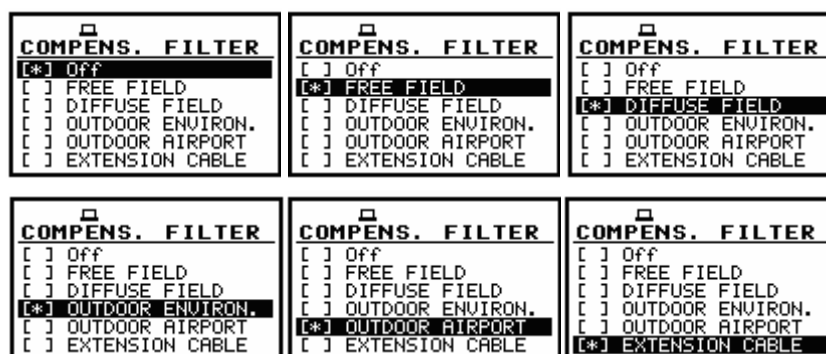
### 9.3 Compensation filter selection- COMPENSATION FILTER

The **COMPENSATION FILTER** position is available only in case of the sound measurements ( in the **MODE** sublist the **SOUND METER** position is selected). It enables the user to switch off or select the required compensation filter for sound measurements. In order to enter the window the user has to select the **COMPENSATION FILTER** text in the **SETUP** list, using the <▲>, <▼> (or <<>, <>>) push-buttons and press the <ENTER>. Selection of the option is made by placing a special character in the line with the name of the proper option and pressing <ENTER>. The frequency characteristics of the filters is given in App. D.



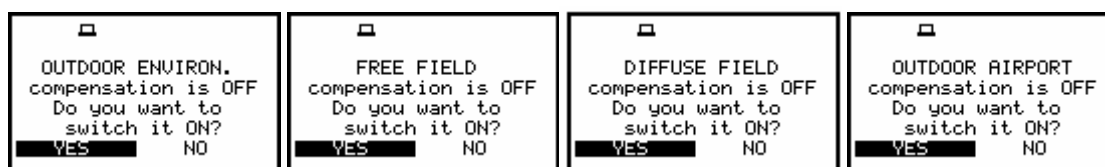
**SETUP** list; the **COMPENSATION FILTER** text highlighted (displayed inversely)

The following options are available: **OFF** (switches off the compensation filter and microphone noise compensation /in other options microphone noise compensation is always switched on/) **FREE FIELD** (compensation filter for the measurements performed in the free field conditions which corrects the case effect), **DIFFUSE FIELD** (compensation filter for measurements performed in the diffuse field conditions), **OUTDOOR ENVIRON.** (compensation filter for measurements when the acoustic signal is perpendicular to the microphone's grid with correction of **SA 203** (outdoor microphone kit) effect, **OUTDOOR AIRPORT** (compensation filter which is used when the acoustic signal is parallel to the microphone's grid with correction of **SA 203** (outdoor microphone kit) effect, **EXTENSION CABLE** (in case of this option only internal noise compensation is switched on, option can be used in case when the microphone is connected with the instrument by the cable) .



Compensation filter window with all available options

During the calibration by measurement the selected compensation filter is automatically switched off. At the first measurement after the calibration on the display appears a question whether the user wants to switch on the filter which was switched on before the calibration again. The selection of **YES** or **NO** is made with <◀>, <▶> push- buttons and for confirmation the user has to press <ENTER>. After switching on the compensation filter the first measurement is made with 5 seconds delay.



Displays with the question about switching on the compensation filter

## 9.4 Day time limits selection - DAY TIME LIMITS

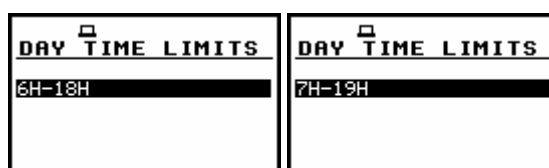
The **DAY TIME LIMITS** enables the user to select the required by the local standards determination of the day and night. These limits are used for the calculation of the **Lden** function (cf. App. D for the definition). In order to enter the window the user has to select the **DAY TIME LIMITS** text in the **SETUP** list, using the <▲>, <▼> (or <◀>, <▶>) push-buttons and press the <ENTER>.



SETUP list with the DAY TIME LIMITS text highlighted (displayed inversely)

Two options are available: **6H-18H** and **7H-19H**. The required limits can be selected by means of the <◀>, <▶> push-buttons.

The window is closed and the instrument returns to the **SETUP** list after pressing the <ENTER> (with the confirmation of a change made in the position) or <ESC> push-button (ignoring a change made in the position).



Displays with the available DAY TIME LIMITS

## 9.5 Exposure time setting - EXPOSURE TIME

The **EXPOSURE TIME** enables the user to set the desired value of the exposure time that is used for the calculation of different **DOSE METER** functions as well as **LEPd** that is also calculated in the **LEVEL METER** mode (cf. App. D for the definitions of the functions).

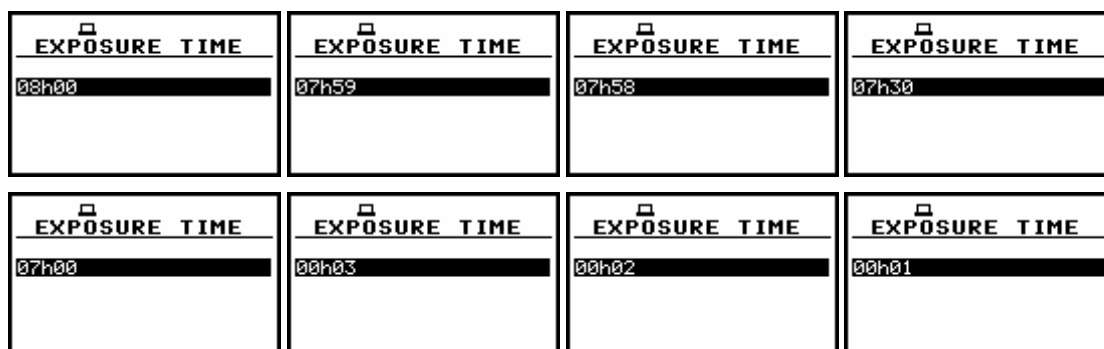
In order to enter the window the user has to select the **EXPOSURE TIME** text in the **SETUP** list, using the <▲>, <▼> (or <◀>, <▶>) push-buttons and press the <ENTER>. This sub-list is available only in the sound mode; in vibration mode it is taken off from the **SETUP** list.



SETUP list with the **EXPOSURE TIME** text highlighted (displayed inversely)

The **EXPOSURE TIME** values are within the range [00h01, 08h00]. The required value can be set using the <◀>/ <▶> push-buttons – after each pressing the exposure time is decremented / incremented by one second. The step can be decremented / incremented up to 30 minutes after pressing the <◀>/ <▶> push-buttons together with the <SHIFT> one.

The window is closed and the instrument returns to the **SETUP** list after pressing the <ENTER> (with the confirmation of a change made in the position) or <ESC> push-buttons (ignoring a change made in the position).



EXPOSURE TIME windows

## 9.6 Setting parameters of the Ext. I/O port - EXTERNAL I/O SETUP

The **EXTERNAL I/O SETUP** enables the user to select the available functionality of the **Ext. I/O** port. In order to enter the window the user has to select the **EXTERNAL I/O SETUP** text in the **SETUP** list, using the <▲>, <▼> (or <◀>, <▶>) push-buttons and press the <ENTER> one.



SETUP list, the **EXTERNAL I/O SETUP** text highlighted

In order to select a value in a position of the sub-list the <◀>, <▶> should be pressed. The position of the sub-list is changed after pressing the <▲>, <▼> push-buttons. In order to confirm

the selection the **<ENTER>** push-button has to be pressed. Such pressing closes the sub-list. After pressing the **<ESC>** push-button the sub-list is also closed but all changes, which were made, are ignored.

### 9.6.1 Mode selection of the Ext. I/O port - MODE

In the **MODE**, it is possible to select the function of the instrument's socket named as **Ext. I/O**. This socket can be used as

- the output of the analogue signal (**ANALOG OUT**) transmitted from the input of the instrument to its output without any digital processing (i.e. filtering),
- the input of the digital signal used as an external trigger to start the measurements (**DIGITAL IN**) in the "slave" instrument,
- the digital output (**DIGITAL OUT**) used for triggering other "slave" instrument from the "master" one,
- the source of any alarm signal in the case of certain circumstances occurred during the measurements (i.e. the level of the input signal was higher than selected one).

The more detailed description of the **Ext. I/O** is given in App. C.

To select the mode, the user has to use the **<<>**, **<>>** push-buttons in the line with the **MODE** text. The window is closed and the instrument returns to the **SETUP** list after pressing the **<ENTER>** (with the confirmation of all changes made there) or **<ESC>** push-buttons (ignoring all changes).

EXT. I/O SETUP	EXT. I/O SETUP	EXT. I/O SETUP
MODE : <b>ANALOG OUT</b>	MODE : <b>DIGITAL IN</b>	MODE : <b>DIGITAL OUT</b>
DIRECT : [✓]	FUNCTION: EXT.TRIGGER	FUNCTION: TRIG. PULSE
D/A : [ ]		POLARISATION : NEG.

EXTERNAL I/O SETUP windows; the MODE selection

In the case of **ANALOG OUT** selection there are two options **DIRECT** and **D/A (Digital/Analog)**. To select the option the user has to place a special character in the line with the option's name using **<<>**, **<>>** and **<▲>**, **<▼>** push-buttons. In the case of **D/A** option the **SOURCE** position appears on the display. The available sources are as follows: **A**, **C**, **Z**, **1 Hz**, **2 Hz**, ..., **20 Hz**. The selection of the **SOURCE** is made by means of **<<>**, **<>>** push-buttons and pressing **<ENTER>**.

EXT. I/O SETUP	EXT. I/O SETUP	EXT. I/O SETUP
MODE : <b>ANALOG OUT</b>	MODE : ANALOG OUT	MODE : ANALOG OUT
DIRECT : [✓]	DIRECT : [✓]	DIRECT : [ ]
D/A : [ ]	D/A : [▲]	D/A : [✓]
		SOURCE : A

EXTERNAL I/O SETUP windows; D/A selection

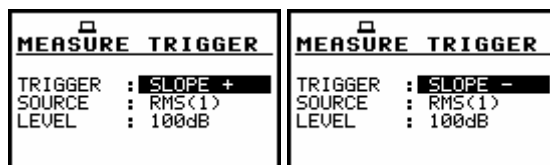
EXT. I/O SETUP	EXT. I/O SETUP	EXT. I/O SETUP
MODE : ANALOG OUT	MODE : ANALOG OUT	MODE : ANALOG OUT
DIRECT : [ ]	DIRECT : [ ]	DIRECT : [ ]
D/A : [✓]	D/A : [✓]	D/A : [✓]
SOURCE : <b>A</b>	SOURCE : <b>C</b>	SOURCE : <b>Z</b>

EXT. I/O SETUP	EXT. I/O SETUP	EXT. I/O SETUP
MODE : ANALOG OUT	MODE : ANALOG OUT	MODE : ANALOG OUT
DIRECT : [ ]	DIRECT : [ ]	DIRECT : [ ]
D/A : [✓]	D/A : [✓]	D/A : [✓]
SOURCE : <b>1.00Hz</b>	SOURCE : <b>2.00Hz</b>	SOURCE : <b>20.0kHz</b>

EXTERNAL I/O SETUP windows; the source selection for D/A option



In the case of **DIGITAL IN** selection the signal appearing on the **I/O** socket will be treated as the external trigger if the **EXT. I/O** is chosen (path: **MENU / INPUT / TRIGGER SETUP / MEASURE TRIGGER / SOURCE / EXT. I/O**) and it can be set only if **SLOPE +** or **SLOPE -** was set as a **TRIGGER** (path: **MENU / INPUT / TRIGGER SETUP / MEASURE TRIGGER / TRIGGER**).

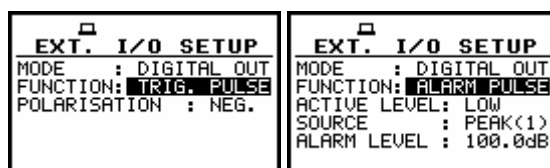


MEASURE TRIGGER windows; the TRIGGER selection

### 9.6.2 Digital output function selection of the I/O socket - FUNCTION

In the **FUNCTION**, it is possible to set the function of the digital output of the **I/O** instrument's socket. The socket can be used as the source of the trigger pulse (**TRIG. PULSE**) which starts the measurement in another "slave" instrument linked to the "master" one or the alarm signal which appears there after fulfilling certain measurement conditions (**ALARM PULSE**).

In order to select the function of the digital output the user has to use the **<<>**, **<>>** push-buttons in the active line with the **FUNCTION** text. The window is closed and the instrument returns to the **SETUP** list after pressing the **<ENTER>** (with the confirmation of all changes made there) or **<ESC>** push-buttons (ignoring all changes).

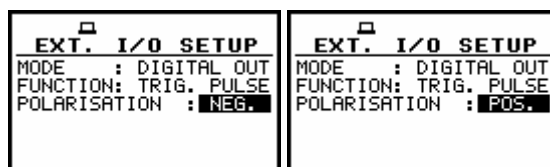


EXTERNAL I/O SETUP windows; the FUNCTION selection

### 9.6.3 Polarisation selection of the digital output signal - POLARISATION

In the **POLARISATION**, it is possible to select which polarisation of the signal (negative or positive) will be valid.

In order to select the polarisation the user has to use the **<<>**, **<>>** push-buttons in the active line with the **POLARISATION** text. The window is closed and the instrument returns to the **SETUP** list after pressing the **<ENTER>** (with the confirmation of all changes made there) or **<ESC>** push-buttons (ignoring all changes).

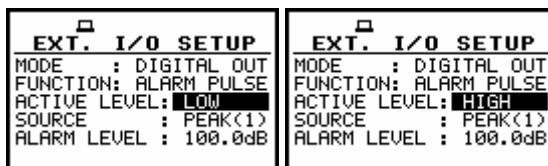


EXTERNAL I/O SETUP windows; the POLARISATION selection

### 9.6.4 Active level selection of the digital output signal - ACTIVE LEVEL

In the **ACTIVE LEVEL**, it is possible to select which level of the signal should be treated as a valid one ("negative" or "positive" logic).

In order to select the level the user has to use the <<>, <>> push-buttons in the active line with the **ACTIVE LEVEL** text. The window is closed and the instrument returns to the **SETUP** list after pressing the <ENTER> (with the confirmation of all changes made there) or <ESC> push-buttons (ignoring all changes).

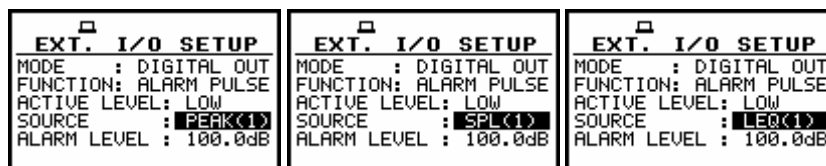


EXTERNAL I/O SETUP windows; the ACTIVE LEVEL selection

### 9.6.5 Source signal selection for the alarm pulse generation - SOURCE

In the **SOURCE**, it is possible to select the measurement result which level should be checked. If the measured result level is greater than selected alarm level – the instrument will generate alarm signal on the I/O socket. The measurement results from the first profile: **PEAK(1)**, **SPL(1)** or **LEQ(1)** can be used for the purpose described above.

In order to select the function of the digital output the user has to use the <<>, <>> push-buttons in the active line with the **SOURCE** text. The window is closed and the instrument returns to the **SETUP** list after pressing the <ENTER> (with the confirmation of all changes made there) or <ESC> push-buttons (ignoring all changes).

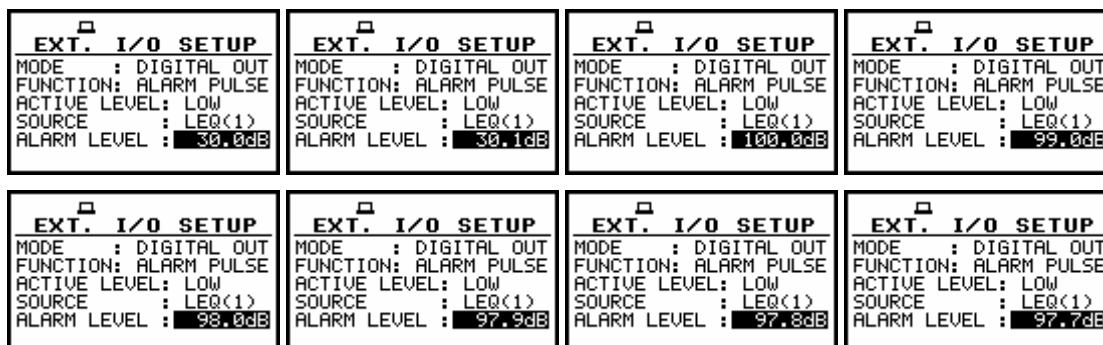


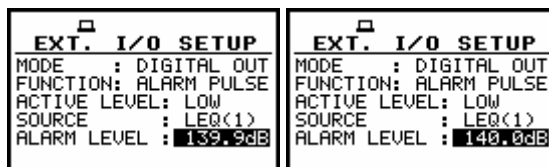
EXTERNAL I/O SETUP windows; the SOURCE selection

### 9.6.6 Alarm level selection on the digital output of I/O - ALARM LEVEL

In the **ALARM LEVEL**, it is possible to set the level of the result to be monitored during the measurements. If the result is greater than the one set in this line, the instrument will generate the alarm signal in the selected logic. The available levels are within the range [30.0 dB, 140 dB].

The **ALARM LEVEL** current value decreasing / increasing by 0.1 dB is possible by means of the <<>/ <>> push-buttons. The step can be decreased / increased up to 1 dB after pressing simultaneously the <<>/ <>> push-buttons with the <SHIFT> one. The window is closed and the instrument returns to the **SETUP** list after pressing the <ENTER> (with the confirmation of all changes made in the window) or <ESC> push-buttons (ignoring all changes).





EXTERNAL I/O SETUP windows; the ALARM LEVEL setting

## 9.7 Activation of human vibration filters - HUMAN VIB. FILT.

In the **HUMAN VIBR. FILT.** it is possible to activate the human vibration filters (**Wk, Wd, Wc, Wj, Wm, Wh, Wg, Wb**), which are not included in the standard set of the instrument. This option can be bought together with the instrument or can be purchased by the user in the future. In the latter case, after selecting the **HUMAN VIB. FILT.** text in the **SETUP** list (in vibration mode), using the **<▲>**, **<▼>** (or **<◀>**, **<▶>**) push-buttons, and pressing **<ENTER>**, the user has to introduce special code for activation of the function. After successful activation the **HUMAN VIBRATION** filters, this text does not appear on the **SETUP** list any more and the instrument never more asks for the code.



SETUP list, the HUMAN VIB. FILT. text highlighted (displayed inversely)



Displays during the entering of the access code to a function

## 9.8 Selection of the current IEPE supply - IEPE CURRENT

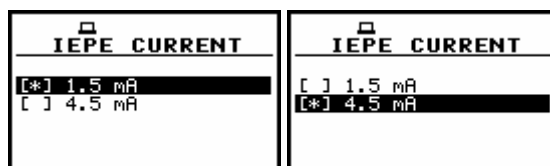
The **IEPE CURRENT** enables the user to choose current IEPE supply.

In order to enter the window the user has to select the **IEPE CURRENT** text in the **SETUP** list, using the **<▲>**, **<▼>** (or **<◀>**, **<▶>**) push-buttons and press the **<ENTER>** one.



SETUP list, the IEPE CURRENT text highlighted (displayed inversely)

Two options are available: **1.5 mA** and **4.5 mA**. The selection is made by placing a special character in the required position by means of the **<◀>**, **<▶>** (or **<▲>**, **<▼>**) push-buttons. The window is closed and the instrument returns to the **SETUP** list after pressing the **<ENTER>** (with the confirmation of a change made in the position) or **<ESC>** push-buttons (ignoring a change made in the position).



IEPE CURRENT windows; the IEPE supply selection

## 9.9 Reference signal in vibration measurements - REFERENCE LEVELS

The **REFERENCE LEVELS** sub-list enables the user to set the reference level of the vibration signal or to inform the user about the reference level in the case of sound measurements. The values, which are set here, are taken into account during the calculations of the measurement results expressed in the logarithmic scale (with the dB as the units).

In order to enter the position the user has to select the **REFERENCE LEVELS** text in the **SETUP** list, using the **<▲>**, **<▼>** (or **<◀>**, **<▶>**) push-buttons and press the **<ENTER>** one. The selection of a parameter which level has to be set is done by means of the **<▲>**, **<▼>** push-buttons.

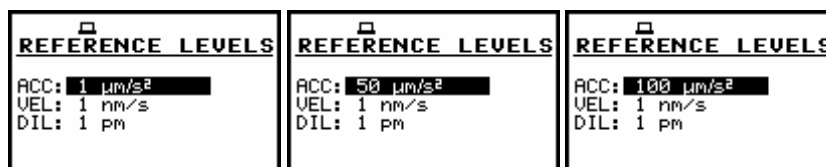


SETUP list, the REFERENCE LEVELS text highlighted (displayed inversely)

### 9.9.1 Setting the reference level of the acceleration signal - ACC

In the **ACC** position the user can set the reference level of the acceleration signal. It is possible to set this level from  $1 \mu\text{m/s}^2$  to  $100 \mu\text{m/s}^2$  with  $1 \mu\text{m/s}^2$  step pressing the **<◀>**, **<▶>** push-buttons. The step can be increased to  $10 \mu\text{m/s}^2$  pressing the **<SHIFT>** with the **<◀>**, **<▶>** push-buttons.

In order to confirm the setting the **<ENTER>** push-button has to be pressed. Such pressing closes the sub-list. After pressing the **<ESC>** push-button the sub-list is also closed but all changes, which were made, are ignored.

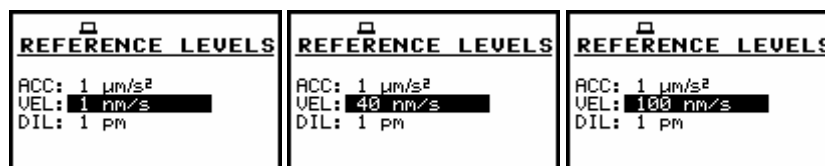


REFERENCE LEVELS windows; the reference level setting of acceleration signal

### 9.9.2 Setting the reference level of the velocity signal - VEL

In the **VEL** position, the user can set the reference level of the velocity signal. It is possible to set this level from  $1 \text{ nm/s}$  to  $100 \text{ nm/s}$  with  $1 \text{ nm/s}$  step pressing the **<◀>**, **<▶>** push-buttons. The step can be increased to  $10 \text{ nm/s}$  pressing the **<SHIFT>** with the **<◀>**, **<▶>** push-buttons.

In order to confirm the setting the **<ENTER>** push-button has to be pressed. Such pressing closes the sub-list. After pressing the **<ESC>** push-button the sub-list is also closed but all changes, which were made, are ignored.

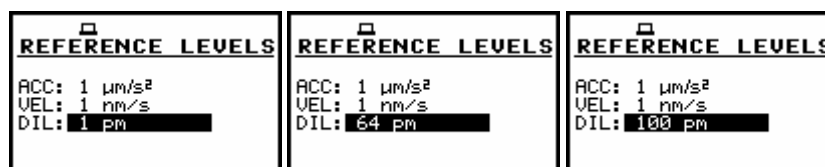


REFERENCE LEVEL windows; setting the reference level of velocity signal

### 9.9.3 Setting the reference level of the displacement signal - DIL

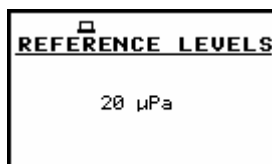
In the **DIL** position, the user can set the reference level of the displacement signal. It is possible to set this level from 1 pM to 100 pM with 1 pM step pressing the <<>, <>> push-buttons. The step can be increased to 10 pM pressing the <SHIFT> with the <<>, <>> push-buttons.

In order to confirm the setting the <ENTER> push-button has to be pressed. Such pressing closes the sub-list. After pressing the <ESC> push-button the sub-list is also closed but all changes, which were made, are ignored.



REFERENCE LEVELS windows; setting the reference level of displacement signal

In the case of sound measurements the **REFERENCE LEVELS** sub-lists is used only to inform the user that the reference level of the acoustic signal is equal to 20 μPa. After pressing the <ESC> or <ENTER> push-buttons the sub-list is closed.

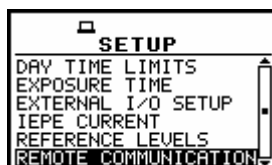


REFERENCE LEVELS windows; the reference level of the acoustic signal

## 9.10 Parameters of remote communication - REMOTE COMMUNICATION

The **REMOTE COMMUNICATION** enables the user to select the type and set the packet size of the packet communication.

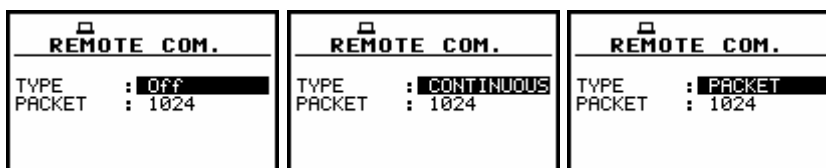
In order to enter the position the user has to select the **REMOTE COMMUNICATION** text in the **SETUP** list, using the <▲>, <▼> (or <<>, <>>) push-buttons and press the <ENTER>.



SETUP list, the REMOTE COMMUNICATION text highlighted (displayed inversely)

### 9.10.1 Selecting the type of remote communication - TYPE

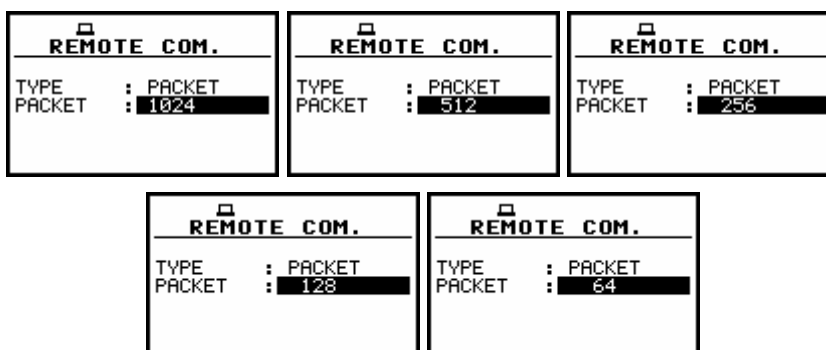
The **TYPE** enables the user to select the type of the **REMOTE COMMUNICATION**. Three options are available: **Off**, **CONTINUOUS** and **PACKET**. The selection of the required option is made by <◀>, <▶> push-buttons. The confirmation is made by pressing <ENTER> push button.



REMOTE COMMUNICATION windows; the TYPE selection

### 9.10.2 Setting the packet size of the remote communication - PACKET

In the case of the **PACKET** type it is possible to select the packet size. The available options are **1024**, **512**, **256**, **128** and **64**. The selection is made by the <◀>, <▶> push-buttons. The confirmation is made by pressing the <ENTER> push button.



REMOTE COMMUNICATION windows; packet size selection

## 9.11 Detector's type selection in the LEQ calculations - RMS INTEGRATION

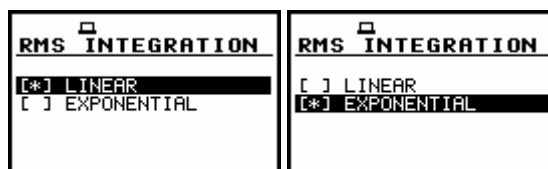
The **RMS INTEGRATION** enables the user to select the detector type for the calculations of the **LEQ**, **Lden**, **LEPd**, **Lxx** and **SEL** functions in case of sound measurements and **RMS** function in case of vibration measurements.

In order to enter the position the user has to select the **RMS INTEGRATION** text in the **SETUP** list, using the <▲>, <▼> (or <◀>, <▶>) push-buttons and press the <ENTER>.



SETUP list with the RMS INTEGRATION text highlighted (displayed inversely)

Two options are available: **LINEAR** and **EXPONENTIAL**. The required parameter can be selected by means of the <▲>, <▼> (or <◀>, <▶>) push-buttons. The window is closed and the instrument returns to the **SETUP** list after pressing the <ENTER> (with the confirmation of a change made in the position) or <ESC> push-buttons (ignoring a change made in the position).



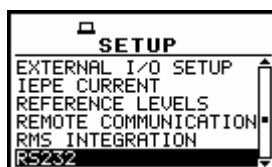
Displays and with the available options of the RMS INTEGRATION

The formulae used for the **LEQ** calculation are given in Appendix D. Setting **LINEAR** is required for getting the true RMS value of the measured signal. When this option is selected in sound mode the value of the **LEQ**, **Lden**, **LEPd**, **Lxx** and **SEL** functions do not depend on the detector time constant: **Fast**, **Slow** or **Impulse** (the results are displayed **without** the indicator of the detectors selected in the profiles). In this case, the indicator **Lin.** (or **L**) is displayed in the different modes of the result presentation. When this option is selected in vibration mode the value of the **RMS** function do not depend on the detector time constant: 100ms, 125ms, 200ms, 500ms, 1.0s, 2.0s, 5.0s, 10.0s.

Setting **EXPONENTIAL** enables the user to fulfil the requirements of another standard for the **LEQ** measurements. When this option is selected in sound mode the value of the **LEQ**, **Lden**, **LEPd**, **Lxx** and **SEL** function depends on the detector time constant (the results are displayed **with** the indicator of the detectors selected in the profiles (*path: MENU / INPUT / PROFILE x / DETECTOR: Fast, Slow or Impulse*)). When this option is selected in vibration mode the value of the **RMS** function depends on the detector time constant.

## 9.12 Setting the parameters of the serial interface - RS232

The **RS232** enables the user to programme the RS 232 interface transmission speed (**BAUD RATE**) and to set the time limit before which the interface operation should be performed (**TIME OUT**). In order to enter the position the user has to select the **RS232** text in the **SETUP** list, using the **<▲>**, **<▼>** (or **<◀>**, **<▶>**) push-buttons and press the **<ENTER>**.

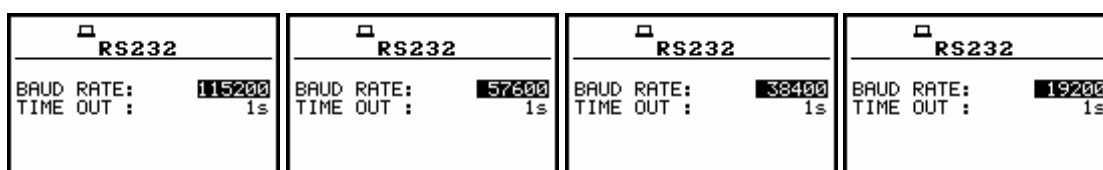


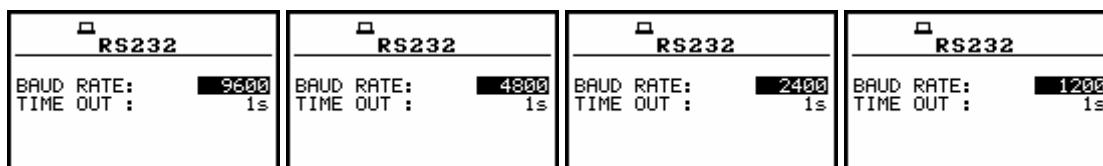
SETUP list, the RS232 text highlighted (displayed inversely)

### 9.12.1 Setting the transmission speed of the serial interface - BAUD RATE

The RS 232 interface transmission (**BAUD RATE**) speed can be selected from the following available values: **1200** (bits / second), **2400** (bits / s), **4800** (bits / s), **9600** (bits / s), **19200** (bits / s), **38000** (bits / s), **57600** (bits / s) or **115200** (bits / s). The selection is made by means of the **<◀>**, **<▶>** push-buttons.

The other RS 232 transmission parameters are fixed to **8 bits for data**, **No parity** & **1 Stop bit**. The selected value has to be confirmed by pressing the **<ENTER>** push-button, which causes the simultaneous return to the **SETUP** list. All settings are ignored after the return to the **SETUP** list by pressing the **<ESC>** push-button.

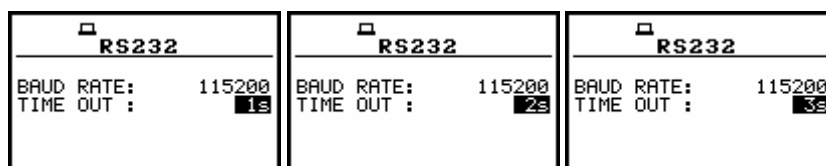




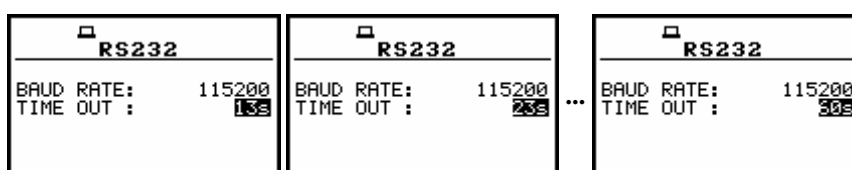
RS232 windows; the possible settings of the BAUD RATE

### 9.12.2 Setting time limit for the performance of serial interface operation - TIME OUT

The **TIME OUT** value shown in the inversely displayed line is increased or decreased by one with each pressing the <←>, <→> push-buttons. The step is increased / decreased to ten after pressing the <←>, <→> push-buttons together with the <SHIFT> one. The default value of this parameter is equal to one but it can be too short period for the printers, which are not too fast. In such case, the **TIME OUT** parameter has to be increased. The window is closed and the instrument returns to the **SETUP** list after pressing the <ENTER> (with the confirmation of all changes made in the window) or <ESC> push-buttons (ignoring all changes made there).



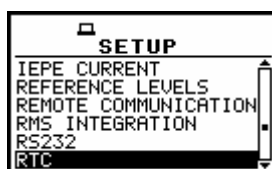
RS232 window; the setting of the TIME OUT with 1-second step



RS232 window; the setting of the TIME OUT with 10-seconds step

### 9.13 Programming the instrument's internal Real Time Clock - RTC









The **RTC** enables one to programme the internal **Real Time Clock**. This clock is displayed in the different places depending on the selected presentation mode. In order to enter the position the user has to select the **RTC** text in the **SETUP** list, using the <▲>, <▼> (or <←>, <→>) push-buttons and press the <ENTER> one.



SETUP list, the RTC text highlighted (displayed inversely)

The selection of the setting parameter (hour, minute, second, day, month and year) is performed using the <←>, <→> push-buttons and the change of its value – using the <←>, <→> push-buttons pressed together with the <SHIFT>.



 <b>RTC</b> 11:16:00 09 OCT 2006 To modify press: SH< or SH> - change	 <b>RTC</b> 11:16:13 09 OCT 2006 To modify press: SH< or SH> - change	 <b>RTC</b> 11:16:18 09 OCT 2006 To modify press: SH< or SH> - change	 <b>RTC</b> 11:16:24 09 OCT 2006 To modify press: SH< or SH> - change
 <b>RTC</b> 11:16:30 09 OCT 2006 To modify press: SH< or SH> - change	 <b>RTC</b> 11:16:34 09 OCT 2006 To modify press: SH< or SH> - change	 <b>RTC</b> 11:16:58 09 OCT 2006 To modify press: SH< or SH> - change	 <b>RTC</b> 11:17:03 09 OCT 2007 To modify press: SH< or SH> - change

RTC windows with the different parameters to be set



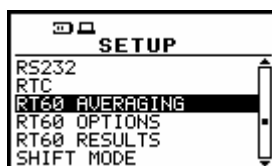
**Notice:** The new value of a parameter is confirmed after each pressing of the <◀> or <▶> together with the <SHIFT> push-buttons (new value is selected without any confirmation from the <ENTER> push-button).

The window is closed and the instrument returns to the **SETUP** list after pressing the <ENTER> or <ESC> push-button.

## 9.14 The RT 60 averaging function - RT60 AVERAGING

The **RT60 AVERAGING** appears in the **SETUP** list when the **RT60** function is selected in the **MEASUREMENT FUNCTION** window (path: **MENU / FUNCTION / MEASUREMENT FUNCTION / RT60**). It is available only in sound mode. This window is opened after the selection of the **RT60 AVERAGING** text from the **SETUP** list by means of the <▲>, <▼> (or <◀>, <▶>) push-buttons and pressing the <ENTER> one.



The **RT60 AVERAGING** contains three positions: **AVERAGING**, **AVERAGING CLEAR** and **AVERAGING NO.**



SETUP list, the RT60 AVERAGING text highlighted (displayed inversely)

### 9.14.1 The RT 60 averaging - AVERAGING

In the **AVERAGING** position, the user can switch on averaging option for the **RT60** measurements. The activation is made by setting of **On** text in the **AVERAGING** line by means of the <◀>, <▶> push-buttons. The confirmation of the activation requires pressing the <ENTER> push-button, which simultaneously closes the window. The **RT60 AVERAGING** window is closed ignoring any changes made in there, after pressing any time the <ESC> push-button.

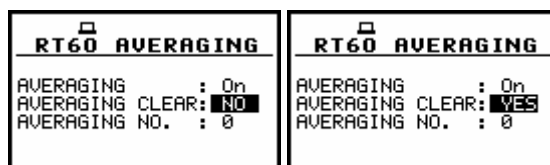
 <b>RT60 AVERAGING</b> AVERAGING : Off AVERAGING CLEAR: NO AVERAGING NO. : 0	 <b>RT60 AVERAGING</b> AVERAGING : On AVERAGING CLEAR: NO AVERAGING NO. : 0
--	---

RT60 AVERAGING window; the AVERAGING activation

### 9.14.2 Resetting the averaging process - AVERAGING CLEAR

The **AVERAGING CLEAR** enables the user to reset the averaging process. All averaged results are lost if not saved. In this position two options are available **YES (clear)** and **NO**.

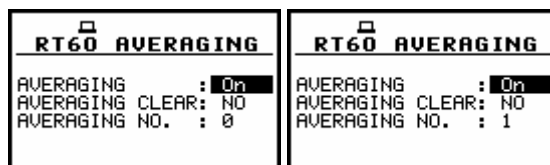
The selection is made by means of the <<>, <>> push-buttons. The confirmation of the selection requires pressing the <ENTER> push-button, which simultaneously closes the window. The **RT60 AVERAGING** window is closed ignoring any changes made in there, after pressing any time the <ESC> push-button.



RT60 AVERAGING window; the AVERAGING CLEAR selection

### 9.14.3 RT 60 averaging number - AVERAGING NO.

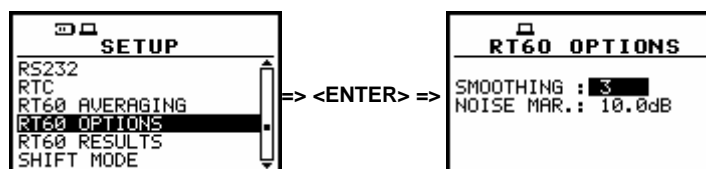
This line is only for indicating purpose. It shows how many measurements were taken to the averaging process calculation. The position is not accessible. The **RT 60 AVERAGING** window is closed ignoring any changes made in there, after pressing any time the <ESC> push-button.



RT60 AVERAGING window; the change of AVERAGING NO. after measurement (position is not accessible)

## 9.15 Setting the auxiliary parameters of RT 60 mode - RT60 OPTIONS

The **RT60 OPTIONS** is accessible in the **SETUP** list in the **SOUND METER** mode when the **RT60** function is selected in the **MEASUREMENT FUNCTION** window (*path: MENU / FUNCTION / MEASUREMENT FUNCTION / RT60*). This sub-list is opened after the selection of the **RT60 OPTION** text from the **SETUP** list by means of the <▲>, <▼> (or <<>, <>>) push-buttons and pressing the <ENTER> one. The **RT60 OPTIONS** consists of two parameters, which influence the calculation of the **RT60** measurements results: **SMOOTHING** and **NOISE MAR.**



RT60 selected in the SETUP list and the RT60 OPTIONS window opened

### 9.15.1 Setting the sound pressure level decay curve averaging - SMOOTHING

In the **SMOOTHING** position, the user can set the parameter of decay curve averaging. In this position available values are from 0 to 15. The selection is made by means of the <<>, <>> push-buttons

with step equal to 1 or by means of the <◀>, <▶> push-buttons pressed together with the <SHIFT> one with the step equal to 5. The confirmation of the selection requires pressing the <ENTER> push-button, which simultaneously closes the window. The **RT60 OPTION** window is closed ignoring any changes made in there, after pressing any time the <ESC> push-button.

RT60 OPTIONS	RT60 OPTIONS	RT60 OPTIONS
SMOOTHING : 1	SMOOTHING : 2	SMOOTHING : 3
NOISE MAR.: 10.0dB	NOISE MAR.: 10.0dB	NOISE MAR.: 10.0dB

RT60 OPTIONS window; the SMOOTHING selection with the step equal to 1

RT60 OPTIONS	RT60 OPTIONS	RT60 OPTIONS
SMOOTHING : 5	SMOOTHING : 10	SMOOTHING : 15
NOISE MAR.: 10.0dB	NOISE MAR.: 10.0dB	NOISE MAR.: 10.0dB

RT60 OPTIONS window; the SMOOTHING selection with the step equal to 5

### 9.15.2 Setting the margin value of background noise level - NOISE MAR.

In the **NOISE MAR.** position the user can set the requesting additional margin value to the background noise level noise margin during the **RT60** measurements. In this position values from **0.0dB** to **20.0dB** are available. The selection is made by means of the <◀>, <▶> push-buttons with 0.1 dB step or by means of the <◀>, <▶> push-buttons pressed together with the <SHIFT> one with the step equal to 1 dB. The confirmation of the selection requires pressing the <ENTER> push-button, which simultaneously closes the window. The **RT60 OPTIONS** window is closed ignoring any changes made in there, after pressing any time the <ESC> push-button.

RT60 OPTIONS	RT60 OPTIONS	RT60 OPTIONS
SMOOTHING : 3	SMOOTHING : 3	SMOOTHING : 3
NOISE MAR.: 10.0dB	NOISE MAR.: 9.9dB	NOISE MAR.: 9.8dB

RT60 OPTIONS window; the NOISE MAR. selection with 0.1dB step

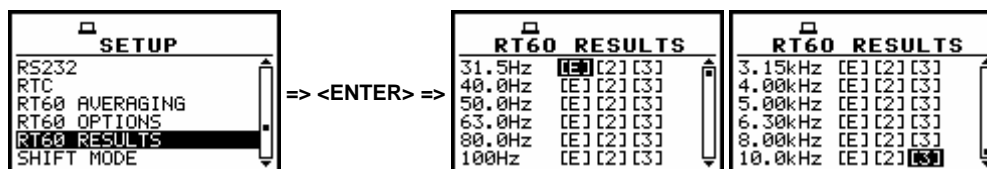
RT60 OPTIONS	RT60 OPTIONS	RT60 OPTIONS
SMOOTHING : 3	SMOOTHING : 3	SMOOTHING : 3
NOISE MAR.: 2.6dB	NOISE MAR.: 3.6dB	NOISE MAR.: 4.6dB

RT60 OPTIONS window; the NOISE MAR. selection with 1dB step

### 9.16 Selection of RT60 results parameters - RT60 RESULTS

The **RT60 RESULTS** appears in the **SETUP** list after selection of the **RT60** function in the **MEASUREMENT FUNCTIONS** window (path: *MEN / FUNCTION/ MEASUREMENT FUNCTION*).

This sub-list is opened after the selection of the **RT60 AVERAGING** text from the **SETUP** list by means of the <▲>, <▼> (or <◀>, <▶>) push-buttons and pressing the <ENTER> one.



RT60 RESULTS selected in the SETUP list and the RT60 RESULTS window opened

By marking ([E], [2], [3]) or unmarking ([ ], [ ], [ ]) the options, the user can set to each 1/3 octave band which of the reverberation time results will be presented in the visualization levels:

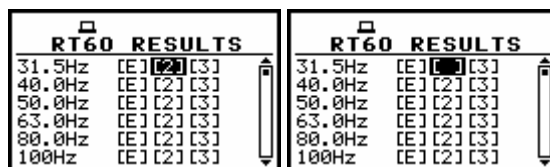
- [E] (EDT) - the EDT (Early Decay Time) is marked,
- [2] (RT 20) - the RT 20 reverberation time is marked,
- [3] (RT 30) - the RT 30 reverberation time is marked.

By pressing the <▲>, <▼> and <◀>, <▶> push-buttons the user can highlight the one of three options [E], [2], [3] in each 1/3 octave band.

For faster scroll between the rows press the <SHIFT> push-button and while holding it, press the <▲>, <▼> push-buttons.

To mark or unmark the desired option first highlight it and then press <◀> or <▶> push-button with <SHIFT> one.

The confirmation of the changes is made by pressing <ENTER> push-button. The RT60 RESULTS window is closed ignoring any changes made in there, after pressing the <ESC> push-button.



RT60 RESULTS window, unmarking option in 1/3 octave band

## 9.17 Selection of few push-buttons mode - SHIFT MODE

The **SHIFT MODE** enables the user to programme the operation mode of the <SHIFT>, <ALT> and <START / STOP> push-buttons.

In order to enter the position the user has to select the **SHIFT MODE** text in the **SETUP** list, using the <▲>, <▼> (or <◀>, <▶>) push-buttons and press the <ENTER> one. The selection of a parameter in both positions is done by means of the <◀>, <▶> push-buttons and confirmed by the <ENTER> one. Any changes made in the window are not confirmed in the case of pressing the <ESC> push-button but the window is closed.



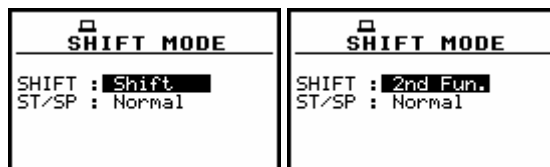
SETUP list, the SHIFT MODE text highlighted (displayed inversely)

### 9.17.1 <SHIFT> / <ALT> push-button working mode selection - SHIFT

In the **SHIFT**, the user can choose between **2nd Fun.** and **Shift**. When the **Shift** text is selected, the <SHIFT> and <ALT> push-buttons operates as in the keyboard of a computer – in order to achieve

the desired result, the second push-button has to be pressed in conjunction with the **<SHIFT>/<ALT>** one. When the **2nd Fun.** text is selected the **<SHIFT>/<ALT>** push-button operates in the sequence with the other one.

In order to select a desired mode of the **<SHIFT>** push-button the **<<>, <>>** should be pressed. In order to confirm the selection the **<ENTER>** push-button has to be pressed. Such pressing closes the sub-list. After pressing the **<ESC>** push-button the sub-list is also closed but all changes, which were made, are ignored.



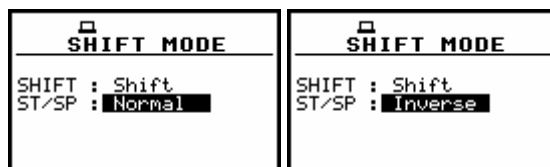
SHIFT MODE windows; the available SHIFT settings

### 9.17.2 <START / STOP> push-button working mode selection - ST/SP

In the **ST/SP** the user can choose between **Normal** and **Inverse**. When the **Normal** text is selected the instrument reacts on each of the **<START / STOP>** push-button pressing, starting or stopping the measurements.

When the **Inverse** text is selected the **<START / STOP>** push-button operates in conjunction or in a sequence with the **<SHIFT>** one. The measurements are started or stopped after pressing both push-buttons.

In order to select a desired mode of the **<START / STOP>** push-button the **<<>, <>>** should be pressed. In order to confirm the selection the **<ENTER>** push-button has to be pressed. Such pressing closes the sub-list. After pressing the **<ESC>** push-button the sub-list is also closed but all changes, which were made, are ignored.



SHIFT MODE windows; the available ST/SP settings

### 9.17.3 Setting ten statistical levels - STATISTICAL LEVELS

The **STATISTICAL LEVELS** position is available only in the case of the sound measurements (in the **MODE** sub-list the **SOUND METER** position is selected).

In the **STATISTICAL LEVELS** it is possible to select which ten statistical levels, named from **N1** to **N10**, has to be calculated, displayed and saved in the files together with the main results.

In order to enter the sub-list the user has to select the **STATISTICAL LEVELS** text in the **SETUP** list, using the **<▲>, <▼>** (or **<<>, <>>**) push-buttons and press the **<ENTER>** one.



SETUP list, the STATISTICAL LEVELS sub-list selected

The default statistic levels have the following settings: **1, 10, 20, 30, 40, 50, 60, 70, 80** and **90**. All values have to be within the range [1, 99]. Each one value can be set independently from the others. The selection of the **Nx** is made using the **<▲>**, **<▼>** push-buttons.

The upper **Nx** visible on the display is active after pressing the **<▲>** together with the **<SHIFT>** push-button.

The lower **Nx** visible on the display is active after pressing the **<▼>** together with the **<SHIFT>** push-button.

The **Nx** current value decreasing / increasing by one is possible by means of the **<<<>** / **<>>>** push-buttons.

The step can be decreased / increased up to ten after pressing simultaneously the **<<<>** / **<>>>** push-buttons with the **<SHIFT>** one.

The sub-list is closed and the instrument returns to the **SETUP** list after pressing the **<ENTER>** (with the confirmation of all changes made in this list) or **<ESC>** push-buttons (ignoring all changes).

<b>STAT. LEVELS</b> N1 = <b>1</b> N2 = 10 N3 = 20 N4 = 30 N5 = 40 N6 = 50	<b>STAT. LEVELS</b> N1 = <b>2</b> N2 = 10 N3 = 20 N4 = 30 N5 = 40 N6 = 50	<b>STAT. LEVELS</b> N1 = <b>5</b> N2 = 10 N3 = 20 N4 = 30 N5 = 40 N6 = 50	<b>STAT. LEVELS</b> N1 = 5 N2 = <b>10</b> N3 = 20 N4 = 30 N5 = 40 N6 = 50
<b>STAT. LEVELS</b> N5 = 40 N6 = 50 N7 = 60 N8 = 70 N9 = 80 N10 = <b>90</b>	<b>STAT. LEVELS</b> N5 = 40 N6 = 50 N7 = 60 N8 = 70 N9 = 80 N10 = <b>99</b>	<b>STAT. LEVELS</b> N5 = 40 N6 = 50 N7 = 60 N8 = 70 N9 = 80 N10 = <b>99</b>	

Displays in the **STATISTICAL LEVELS** sub-list

## 9.18 Programming the instrument's internal timer - **TIMER**

The **TIMER** enables one to programme the internal timer. The instrument can be switched on by itself in the programmed time and it can perform the measurements using the setup, which was used before its switching off.

The selection of the parameter to be set is performed using the **<▲>**, **<▼>** and the change of its value – using the **<<<>**, **<>>>** push-buttons pressed together with the **<SHIFT>**.

In order to enter the position the user has to select the **TIMER** text in the **SETUP** list (using the **<▲>**, **<▼>** or **<<<>**, **<>>>** push-buttons) and press the **<ENTER>** one.

<b>SETUP</b> RMS INTEGRATION RS232 RTC SHIFT MODE STATISTICAL LEVELS <b>TIMER</b>
---

SETUP list, the **TIMER** text highlighted (displayed inversely)





### 9.18.1 Selecting the mode of the timer function - **MODE**

The **MODE** of the timer function is selected pressing the **<<<>**, **<>>>** push-buttons when the **MODE** text is displayed inversely in the **TIMER** sub-list.

The timer can be switched off – **Off**, switched on only once – **SINGLE**, switched on many times regularly – **REGULAR** with the period between two consecutive measurements set in the **REPETITION** line or switched on up to four times, not regularly – **IRREGULAR** in the time set in the **TIMEx** positions.

The selected value has to be confirmed by pressing the **<ENTER>** push-button, which causes the simultaneous return to the **SETUP** list. All settings are ignored after the return to the **SETUP** list by pressing the **<ESC>** push-button.

In the case the timer function is active (**SINGLE**, **REGULAR** or **IRREGULAR**) the clock icon starts blinking up to switching timer function off or up to finishing programmed measurements.

 <b>TIMER</b> MODE : Off	 <b>TIMER</b> MODE : SINGLE START DAY : 01 APR START HOUR: 00:00	 <b>TIMER</b> MODE : REGULAR START DAY : 01 APR START HOUR: 00:00 REPETITION: 12:00	 <b>TIMER</b> MODE : IRREGULAR START DAY : 01 APR TIME1: 00:00 [ ] TIME2: 00:00 [ ] TIME3: 00:00 [ ] TIME4: 00:00 [ ]
--	--	--	--







TIMER windows; the mode selection

### 9.18.2 Setting day of the instrument's switch on - START DAY

The **START DAY** determines the date of the measurement start. The timer can be programmed up to one month ahead and during the date setting the current state of the **Real Time Clock** is taken into account.

The required date can be selected pressing the **<<>**, **<>>** push-buttons when the **START DAY** text is displayed inversely in the **TIMER** sub-list.

The selected value has to be confirmed by pressing the **<ENTER>** push-button, which causes the simultaneous return to the **SETUP** list. All settings are ignored after the return to the **SETUP** list by pressing the **<ESC>** push-button.




<div><div></div><div>TIMER</div></div> <div>MODE : SINGLE START DAY : 01 FEB START HOUR: 00:00</div>	<div><div></div><div>TIMER</div></div> <div>MODE : SINGLE START DAY : 02 FEB START HOUR: 00:00</div>	<div><div></div><div>TIMER</div></div> <div>MODE : REGULAR START DAY : 01 MAR START HOUR: 00:00 REPETITION: 12:00</div>	<div><div></div><div>TIMER</div></div> <div>MODE : REGULAR START DAY : 02 MAR START HOUR: 00:00 REPETITION: 12:00</div>
...			
<div><div></div><div>TIMER</div></div> <div>MODE : IRREGULAR START DAY : 02 MAR TIME1: 00:00 [ ] TIME2: 00:00 [ ] TIME3: 00:00 [ ] TIME4: 00:00 [ ]</div>	<div><div></div><div>TIMER</div></div> <div>MODE : IRREGULAR START DAY : 03 APR TIME1: 00:00 [ ] TIME2: 00:00 [ ] TIME3: 00:00 [ ] TIME4: 00:00 [ ]</div>		

TIMER windows; setting day of the instrument's switch on

### 9.18.3 Setting hour of the instrument's switch on - START HOUR

The **START HOUR** determines hour of the measurement start. The required hour can be selected pressing the **<<>**, **<>>** push-buttons when the **START HOUR** text is displayed inversely in the **TIMER** sub-list.

In order to set minutes one has to enter their position pressing the **<▲>**, **<▼>** pushbuttons and then pressing the **<<>**, **<>>** push-buttons to select the proper value. The selected value has to be confirmed by pressing the **<ENTER>** push-button, which causes the simultaneous return to the **SETUP** list. All settings are ignored after the return to the **SETUP** list by pressing the **<ESC>** push-button.

 <b>TIMER</b> MODE : SINGLE START DAY : 01 FEB START HOUR: 01:00	 <b>TIMER</b> MODE : SINGLE START DAY : 01 FEB START HOUR: 01:10	 <b>TIMER</b> MODE : SINGLE START DAY : 01 FEB START HOUR: 02:00
--	--	--

TIMER	TIMER	TIMER
MODE : REGULAR START DAY : 03 MAR START HOUR: 01:00 REPETITION: 12:00	MODE : REGULAR START DAY : 03 MAR START HOUR: 02:00 REPETITION: 12:00	MODE : REGULAR START DAY : 03 MAR START HOUR: 02:10 REPETITION: 12:00

TIMER windows; setting hour and minute of the instrument's switch on

#### 9.18.4 Selecting the start hours for four irregular automatic measurements - TIMEx

The **TIMEx** (**TIME1**, **TIME2**, **TIME3**, **TIME4**) is used to determine four irregular automatic starts of the measurements. The required hour can be selected pressing the <<>, <>> push-buttons when the **TIMEx** text is displayed inversely in the **TIMER** sub-list (mode **IRREGULAR**).

In order to set minutes one has to enter the proper line pressing the <▲>, <▼> push-buttons and then pressing the <<>, <>> push-buttons to select the proper value. The selected value has to be confirmed by pressing the <ENTER> push-button, which causes the simultaneous return to the **SETUP** list. All settings are ignored after the return to the **SETUP** list by pressing the <ESC> push-button.

#### 9.18.5 Selecting the period between two consecutive measurements - REPETITION

The **REPETITION** of the timer function is selected pressing the <<>, <>> push-buttons when the **REPETITION** text is displayed inversely in the **TIMER** sub-list (mode **REGULAR**). This parameter can be programmed from **00:00** up to **99:59**.

In order to set the proper value one has to select hours or minutes pressing the <▲>, <▼> push-buttons and then, pressing the <<>, <>> push-buttons, to select the proper value. The selected value has to be confirmed by pressing the <ENTER> push-button, which causes the simultaneous return to the **SETUP** list. All settings are ignored after the return to the **SETUP** list by pressing the <ESC> push-button.

TIMER	TIMER	TIMER	TIMER
MODE : REGULAR START DAY : 03 MAR START HOUR: 01:00 REPETITION: 12:00	MODE : REGULAR START DAY : 03 MAR START HOUR: 01:00 REPETITION: 11:00	MODE : REGULAR START DAY : 03 MAR START HOUR: 01:00 REPETITION: 11:30	MODE : REGULAR START DAY : 03 MAR START HOUR: 01:00 REPETITION: 11:59

TIMER windows; setting REPETITION parameter

#### 9.18.6 Description of the exemplary timer function execution

The **TIMER** function is used to programme the instrument's switch on at the given time and perform the measurements with the parameters set in the **INPUT** sub-list. Let us assume that the user wants to switch on the instrument the 1<sup>st</sup> of February, at 13:25, measure sound during 10 seconds without using logger and save the results in a file @RES2.

In order to do this the user has to set the parameters of the **TIMER** function (*path: MENU / SETUP / TIMER*), the measurement parameters (*path: MENU / INPUT / MEASUREMENT SETUP*), activate the **AUTO SAVE** function (*path: MENU / FILE / SAVE OPTIONS*), named the file (the **FILE NAME** window is opened after switching on the **AUTO SAVE** function) and finely – switched off the instrument.

TIMER	MEASUR. SETUP	SAVE OPTIONS
MODE : SINGLE START DAY : 01 FEB START HOUR: 13:25	START DELAY : 1s INTEGR. PERIOD : 10s REP. CYCLE : 1 LOGGER : Off	RAM FILE : [ ] REPLACE : [ ] SAVE STATISTICS: [ ] AUTO SAVE : [X] DIRECT SAVE : [ ] SAVE MAX SPECT.: [ ]





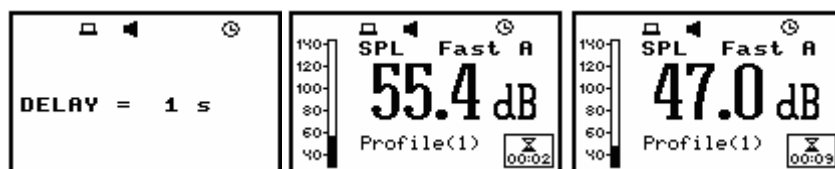
Exemplary settings made for the desired execution of the TIMER function

The instrument will be switched on the 1<sup>st</sup> of February at 13:25 and will be warmed up for the period of 60 seconds decrementing by one after each second the counter visible on the display.



Counting down during the warming up of the instrument after switching it on

After warming up the instrument and the preset **DELAY** time, the measurements are performed for a period of ten seconds. Then, the results are saved in the file which name was given or accepted (the proper information is displayed) and finely – the instrument is switched off.



Displays during the executing of the TIMER function



**Notice:** The instrument's **TIMER** function can be used for multiply measurements (at the programmed day and time with the selected repetition). The first switch on of the instrument **must** be within one month ahead.

## 9.19 Selection the USB–HOST port functionality - USB–HOST PORT

The **USB–HOST PORT** enables one to programme the functionality of the instrument's socket named **USB Host**.

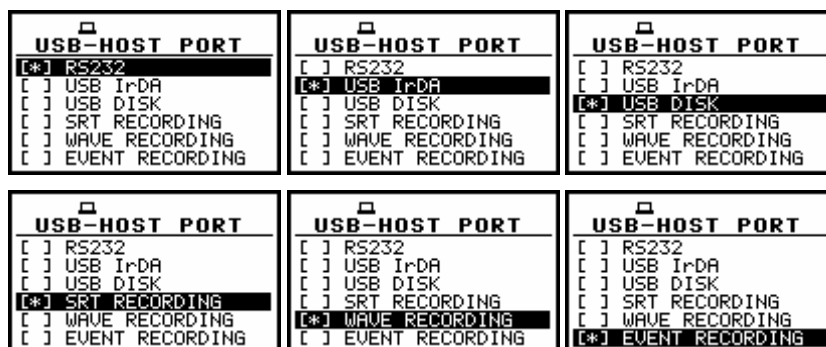
In order to enter the position the user has to select the **USB–HOST PORT** text in the **SETUP** list, using the <▲>, <▼> (or <◀>, <▶>) push-buttons and press the <ENTER> one.



SETUP list, the USB–HOST PORT text highlighted (displayed inversely)

The socket **USB Host** can be used to serve as the input of the different interfaces: **RS 232** or **USB**. The **RS 232** interface in the **G7** instrument is available as a hardware option (a special interface, named as the **SV 55**, with a dedicated microprocessor has to be attached to the socket **USB Host**).

The RS232 is the default setting in this window. Only in this option the USB host controller is awoken and the power consumption is the lower one. An error occurs in the case of the connection to the socket the peripheral device of the different type than the selected one.



Displays in the USB-HOST PORT

The selection of the socket's functionality is made with the <▲>, <▼> (or <◀>, <▶>) push-buttons which moves the special character between the available options. The selection is confirmed after pressing the <ENTER> push-button which closes the window and returns to the **SETUP** list. The return to this list is also possible after pressing the <ESC> push-button but the selection is not confirmed. In order to activate **IrDA**, **SRT RECORDING**, **WAVE RECORDING** or **EVENT RECORDING** the user has to introduce a special code.



Displays during the entering of the access code to **SRT RECORDING**, **WAVE RECORDING** or **EVENT RECORDING**

The USB host interface can be used to control the external USB memory disk (**USB DISK**, **SRT RECORDING**, **WAVE RECORDING**, **EVENT RECORDING**) with the FAT16 or FAT32 file systems or **IrDA** (Infrared Data Association) interface (**USB IrDA**) based on the dedicated circuit STIr4200.



**Notice:** The converter **SV 55** serves as the RS 232 interface. The **SV 55** connection to the **USB Host** socket is detected and after successful detection the headphone icon is switched on. The transmission using the **SV 55** is possible only in the case when the instrument is not connected to a PC with the **USB Device** port.



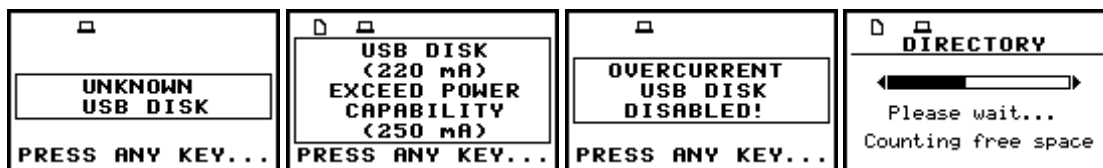
**Notice:** The connection to the **USB Host** socket the USB disk switches off the instrument's internal flash memory. All file functions and remote commands are redirected to the USB disk. The internal flash memory is activated after disconnecting USB disk and the instrument.

After the **USB DISK**, **SRT RECORDING**, **WAVE RECORDING** or **EVENT RECORDING** selection, the device connected to that socket is recognised. The warning appears on the display after the connection of the unknown device.

In the case, the device declares the current consumption greater than 200 mA the dedicated warning is presented.

In the case, the current consumption is greater than 250 mA the connected USB disk is switched off and special warning is displayed.

In other cases, the connected USB disk is initiated and the free space is determined.



Displays with the different USB disk warnings

This operation can last up to few minutes depending on the disk's capacity. The detection of the **USB DISK** is signalled by the paper sheet icon (at the display's left corner). Next, the file's directory should be determined (*path: MENU / FILE / DIRECTORY*). This directory can be created in the instrument or already existing one in the disk is selected.

The **FREE SPACE** denotes the available free memory on the connected disk.

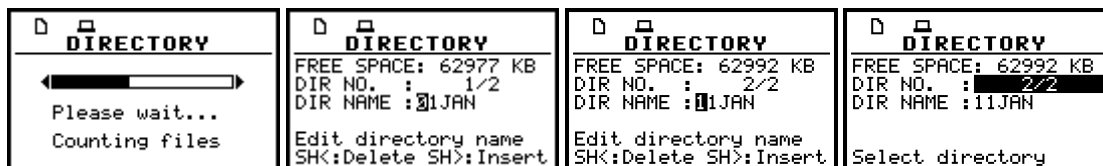
The **DIR NO.** shows the number of the selected directory (the 1<sup>st</sup> number) and the number of the existing directories (the 2<sup>nd</sup> number). In the case the directories do not exist, these numbers are equal to zero.

The **DIR NAME** enables one to edit the directory name (the 1<sup>st</sup> number) or displays its name. The help lines are placed at the display's bottom.

There are two ways of the current directory selection:

- the name edition in the **DIR NAME** line. The default name consists of the day number and the month abbreviation. The not existing directory will be created.
- the selection of the existing directory by means of the <<>, <>> push-buttons pressed in the line with the **DIR NO.** text. The name of the selected directory is displayed in the **DIR NAME** line.

The selection is confirmed after pressing the <ENTER> push-button which closes the window and returns to the **FILE** list. The return to this list is also possible after pressing the <ESC> push-button but the selection is not confirmed. The selection of the directory is obligatory during the initialisation process. In this case also the <ESC> push-button confirms the settings.



Contents of the **DIRECTORY** window

In the case of the **TIMER** function, the directory selection is skipped and the default one is created.

The usage of the USB disk modifies a few windows and lists. First of all, the described above **DIRECTORY** window and **COPY FILES TO USB, MOVE FILES TO USB** windows appear in the **FILE** list. Additionally, in some places concerning the file management the info about the name of the current USB disk directory is displayed in the upper line: *DIRECTORY: the name of the current directory*.

These places are as follows: *DISPLAY/LOGGER VIEW, FILE/LOAD, FILE/DELETE/RESULT FILES, FILE/DELETE/LOGGER FILES, FILE/DELETE/SETUP FILES, FILE/CATALOGUE, FILE/LOAD SETUP*.

The usage of the USB disk modifies also the execution of a few functions, namely:

- the **DEFRAGMENTATON** is not executed,
- the **REAL TIME** transmission is stopped,
- the remote file writing using the #9 function is not available
- in the **FILE / FREE SPACE** window the free space and the total capacity of the USB disk are given,
- in the file report the name of the current directory of the USB disk is added,

- the USB disk memory is not divided between the files and the logger, so the free space concerns both: logger and file memory.

The USB disk can be disconnected when the measurements are not performed and the results are presented. The internal instrument's flash memory is initialised after switching off the USB disk.

In the USB disk that is divided into partitions its first partition has to serve FAT32 or FAT16 file system. Only short name file (up to 8 characters, similar to DOS system) is implemented. The existing longer names are shortened.

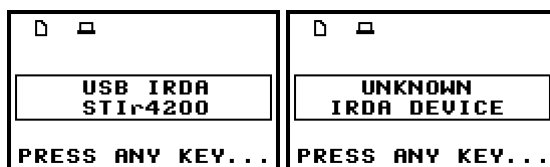


**Notice:** The disconnection of the USB disk during the data transmission can cause the lost of data saved in the USB disk as well as in the instrument's internal flash.

The IrDA is the wireless interface used for the communication between the instrument and a PC. The connection of the IrDA converter results in displaying the info window and switching on the paper sheet icon (at the left side of the upper line).

In the case of the unsuitable settings in the **USB HOST PORT** window or connecting wrong device another info window is displayed.

The transmission parameters are selected automatically during the negotiation process. The fastest available speed equals to 115 200 kb/s. In this case, the real speed is not bigger than 1.5 kB/s. The IrDA programming is based on a virtual COM port emulation in a PC.



Displays during the IrDA interface connection

## 9.20 Setting the coefficients of the user filters - USER FILTERS

The **USER FILTERS** position enables the user to introduce the values of the coefficients of the user filters.

In order to enter the position the user has to select the **USER FILTERS** text in the **SETUP** list, using the <▲>, <▼> (or <◀>, <▶>) push-buttons and press the <ENTER>.

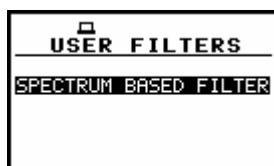


SETUP list, the **USER FILTERS** text highlighted (displayed inversely)

### 9.20.1 Setting filter coefficients for octave analysis - SPECTRUM BASED FILTERS

The **SPECTRUM BASED FILTERS** sub-list enables the user to introduce the values of the filter coefficients correcting the results of **1/1 OCTAVE** or **1/3 OCTAVE** analysis. The results of the analysis (the **TOTAL** values) can be modified by the introduced factors.

In order to enter the sub-list the user has to select the **USER FILTERS** text in the **SETUP** list, using the <▲>, <▼> (or <◀>, <▶>) push-buttons and press the <ENTER>. The **USER FILTERS** (sub-list) contains 3 sub-lists: **VIEW**, **EDIT** and **CLEAR**.

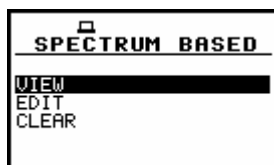


USER FILTERS windows, SPECTRUM BASED FILTERS selected

### 9.20.1.1 Looking at the coefficients of the user filters set - VIEW

The **VIEW** sub-list enables one to look at the coefficients of the **USER FILTERS** sets saved in the instrument under the names **S1**, **S2**, **S3**. The coefficients can be set by the user in the instrument by means of the **EDIT** option or sent to it (together with the name) by means of the interface using **#6** function (cf. App. A for the description).

In order to enter the sub-list the user has to select in the **SPECTRUM BASED FILTER** sub-list the **VIEW** text, using the **<▲>**, **<▼>** (or **<◀>**, **<▶>**) push-buttons and press the **<ENTER>**. In the **VIEW** window one can select one of three mentioned above filters (**S1**, **S2** and **S3**). The selection of the filter in this sub-list is performed by means of the **<◀>**, **<▶>** push-buttons.



SPECTRUM BASED FILTERS window, the VIEW text highlighted

The sub-list is closed and the instrument returns to the **USER FILTERS** sub-list after pressing the **<ESC>** push-button (ignoring a change made in the position).



VIEW windows, the filter selection

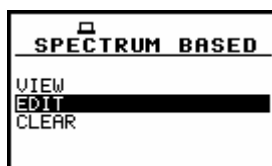
After pressing the **<ENTER>** push-button on the displayed inversely text the proper sub-list is opened containing the values of the coefficients for all **SPECTRUM BASED 1/1 OCTAVE** and **1/3 OCTAVE** filters. It is not possible to change the values. The selection of the displayed coefficients in the selected filter is performed by means of the **<▲>**, **<▼>** push-buttons.

S1	S1	S1	S1
0.80Hz : -INF	100Hz : 0.0dB	500Hz : 1.0dB	0.80Hz : -INF
1.00Hz : -INF	125Hz : 1.0dB	630Hz : 1.0dB	1.00Hz : -INF
1.25Hz : -INF	160Hz : 1.0dB	800Hz : 1.1dB	1.25Hz : -INF
1.60Hz : -INF	200Hz : 1.0dB	1.00kHz : 0.0dB	1.60Hz : -INF
2.00Hz : 0.0dB	250Hz : 3.0dB	1.25kHz : 0.0dB	2.00Hz : 0.0dB
2.50Hz : 0.0dB	315Hz : 3.0dB	1.60kHz : 0.0dB	2.50Hz : 0.0dB

S1 filter windows

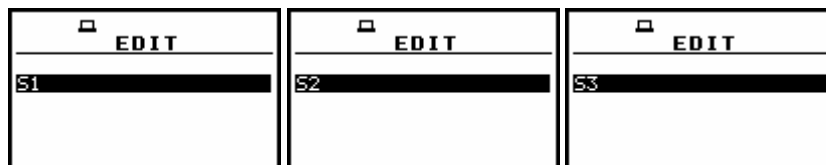
### 9.20.1.2 Setting the coefficients of the user filters set - EDIT

The **EDIT** sub-list enables the user to select which filters should be edited; the available options are as follows: **S1**, **S2**, **S3** or any other transmitted to the instrument from a PC by means of the interface. In order to enter the sub-list the user has to select the **EDIT** text in the **SPECTRUM BASED FILTER** sub-list, using the **<▲>**, **<▼>** (or **<◀>**, **<▶>**) push-buttons and press the **<ENTER>**.



SPECTRUM BASED FILTERS window, the EDIT text highlighted

The selection of the position in this sub-list is performed by means of the <<>, <>> push-buttons. After pressing the <ENTER> push-button when the **S1**, **S2**, **S3** or any other (in the **EDIT** window) text is displayed inversely, the sub-list containing the values of the coefficients for all **1/1 OCTAVE** and **1/3 OCTAVE** filters is opened.

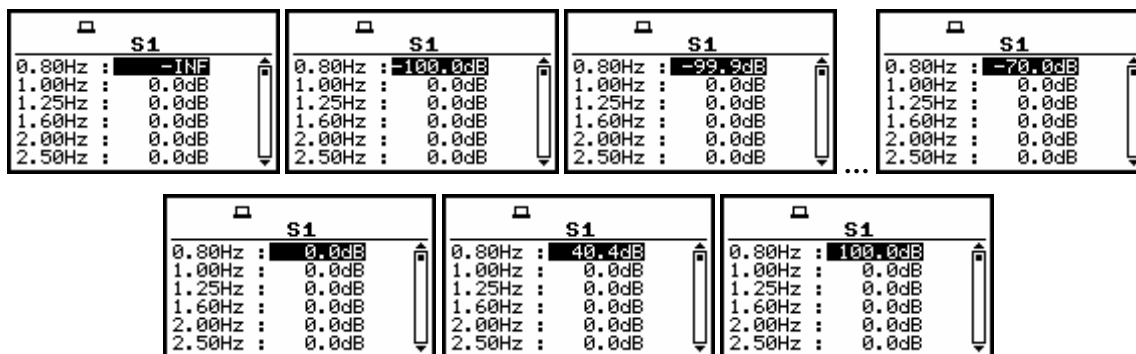


EDIT windows, the filter selection

The opened window contains the centre frequencies of the filters and their coefficients:

- ❖ **0.80 Hz**: available values of 0.8 Hz centre frequency filter: **-INF**, **-100.0dB ... 100.0dB**
- ❖ **1.00 Hz**: available values of 1Hz centre frequency filter: **-INF**, **-100.0dB ... 100.0dB**
- ❖ ...
- ❖ **20.0kHz**: available values of 20 kHz centre frequency filter: **-INF**, **-100.0dB ... 100.0dB**

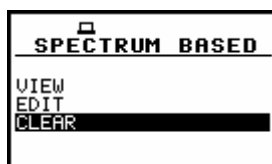
The selection of the position in the set is performed by means of the <▲>, <▼> push-buttons. The value is introduced by pressing the <<>, <>> push-buttons. The sub-list is closed and the instrument returns to the **USER FILTERS** sub-list after pressing the <ENTER> (with the confirmation of all settings made in the sub-list) or <ESC> push-button (ignoring all settings made in the sub-list).



S1 filter windows; the coefficient selection

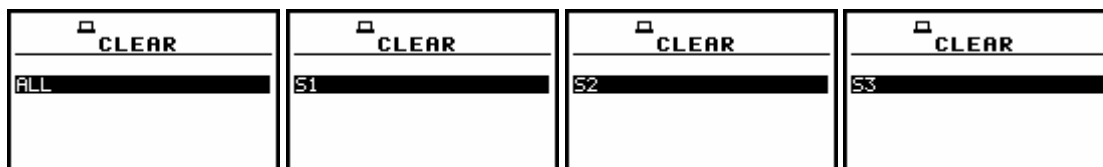
### 9.20.1.3 Clearing the coefficients of the user filters - CLEAR

The **CLEAR** position enables the user to clear the values of the user coefficients of octave or third octave filters. It is possible to clear all sets of coefficients (**ALL**), to clear the first set (**S1**), to clear the second one (**S2**), to clear the third one (**S3**) or any other transmitted to the instrument from a PC by means of the interface.



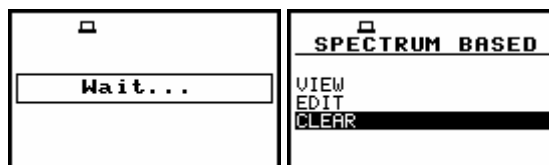
### SPECTRUM BASED FILTER window; the CLEAR position selected

In order to enter the sub-list the user has to select in the **SPECTRUM BASED FILTER** sub-list the **CLEAR** text, using the <▲>, <▼> (or <◀>, <▶>) push-buttons and press the <ENTER>. The selection of the position in this sub-list is performed by means of the <◀>, <▶> push-buttons. The coefficients of a set (or sets) are cleared after the selection of the proper text by means of the <◀>, <▶> push-buttons and after pressing the <ENTER> one.



CLEAR windows, the selection of the filters to be cleared

After this, the **WAIT** text appears on the display and the instrument returns to the **SPECTRUM BASED** window. The **CLEAR** sub-list is also closed and the instrument returns to the **SPECTRUM BASED** window after pressing the <ESC> push-button (without taking any action).



Displays during and after the execution of CLEAR operation

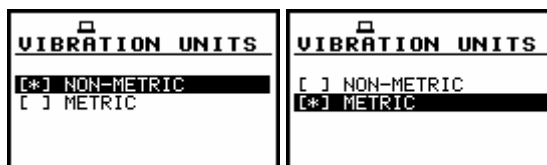
## 9.21 Selection of the vibration units - VIBRATION UNITS

The **VIBRATION UNITS** position enables the user to select the units for the vibration measurements (this position is available only in **VM**). In order to enter the position the user has to select the **VIBRATION UNITS** text in the **SETUP** list, using the <▲>, <▼> (or <◀>, <▶>) push-buttons and press the <ENTER>.



SETUP list, the VIBRATION UNITS text highlighted (displayed inversely)

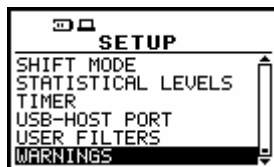
It is possible to select the **NON-METRIC** units (e.g. g, ips, mil etc.) or **METRIC** units (e.g.  $m/s^2$ , m/s, m etc.). The selection is done by means of the <◀>, <▶> push-buttons. In order to confirm the selection the <ENTER> push-button has to be pressed. Such pressing closes the sub-list. After pressing the <ESC> push-button the sub-list is also closed but all changes, which were made, are ignored.



VIBRATION UNITS windows with the available positions

## 9.22 Warnings selection - WARNINGS

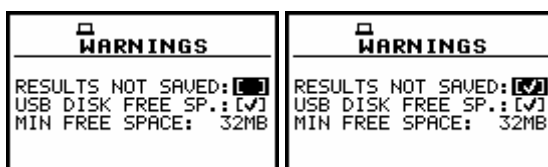
The **WARNINGS** enables the user to select the messages, which could be displayed during the operation of the instrument. In order to enter the window the user has to select the **WARNINGS** text in the **SETUP** list, using the **<▲>**, **<▼>** (or **<◀>**, **<▶>**) push-buttons and press the **<ENTER>**. This window contains only one position.



SETUP list, the WARNINGS text highlighted (displayed inversely)

### 9.22.1 Saving the measurement results in a file - RESULTS NOT SAVED

In order to switch on the displaying of the message the user has to place, by means of the **<◀>**, **<▶>** push-buttons, the special character in the warning's position. The window is closed and the instrument returns to the **SETUP** list after pressing the **<ENTER>** (with the confirmation of a change made in the position) or **<ESC>** push-button (ignoring a change made in the position).



WARNINGS windows; RESULTS NOT SAVED selected

When the position is set to be active the special warning can be displayed after pressing the **<START/STOP>** push-button. It will be happened in a case when the result of the previous measurement was not saved in a file of the instrument.



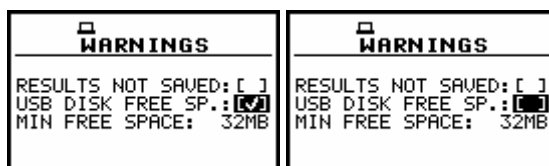
Displays with LAST RESULTS NOT SAVE warning

The question **Continue?** appears with the warning message. The default value of the **CONTINUE** position is **SAVE NEXT**. After pressing the **<ENTER>** push-button the instrument saves last results with the name number increased by one. Using the **<◀>**, **<▶>** push-buttons one can change the value of the **CONTINUE** position to **YES** or **NO**. If **YES** is chosen (to confirm the change the **<ENTER>** should be pressed), the instrument returns to the active mode of result presentation starting the new measurement process. If **NO** is chosen (to confirm the change the **<ENTER>** should be pressed), the instrument returns to the active mode of measurement result's presentation without starting the new measurement process.

### 9.22.2 Checking free space on the USB disk - USB DISK FREE SP.

In order to switch on the displaying of the message the user has to place, by means of the **<◀>**, **<▶>** push-buttons, the special character in the warning's position. The window is closed and the instrument returns to the **SETUP** list after pressing the **<ENTER>** (with the confirmation of a change made in the position) or **<ESC>** push-button (ignoring a change made in the position).

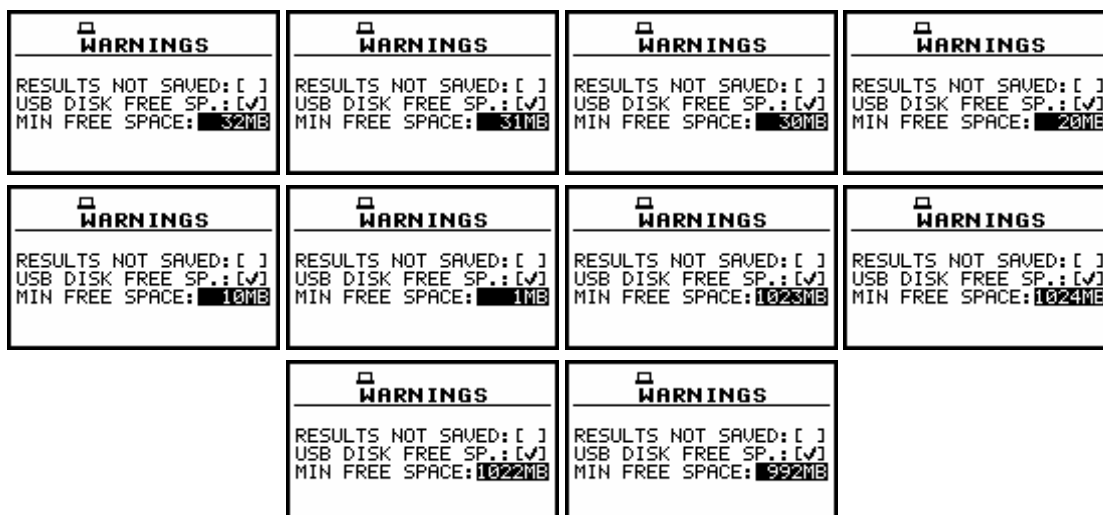




WARNINGS windows; USB DISK FREE SP. selected

### 9.22.3 Minimum USB disk memory free space setting - MIN FREE SPACE

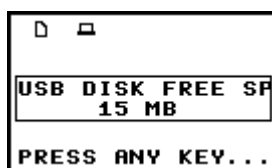
In this line, the user can determine the amount of the USB disk memory free space.



WARNINGS windows; MIN FREE SPACE selection

The selected limit has to be within the range [1 MB, 1024 MB]. If the available memory is not greater than that limit, the warning will be displayed. The limit is set by means of the <◀>, <▶> push-buttons with the step equal to one MB. The step is increased up to ten MB, pressing the <◀>, <▶> push-buttons together with the <SHIFT> one. The window is closed and the instrument returns to the **SETUP** list after pressing the <ENTER> (with the confirmation of a change made in the position) or <ESC> push-button (ignoring a change made in the position).

The exemplary warning is presented below. The return to the programme execution is done after pressing any push-button except the <SHIFT> and <ALT>.



Display with USB DISK FREE SPACE warning



## A. REMOTE CONTROL

The **USB 1.1 interface** is the serial one working with 12 MHz clock. Its speed is relatively high and it ensures the common usage of USB in all produced nowadays Personal Computers.

The **HOST USB** functionality is also available. The USB HOST controller installed in the instrument enables the user to connect to this meter the USB memory sticks, USB hard disks, USB printers etc.

The **RS 232 interface** is also available but as an option. In order to activate this option the user has to buy a special cable with a programmed processor. This interface complies with CCIT V.24 standard. Practically all Personal Computers can be linked to the instrument by means of this interface. The maximum available transmission speed is equal to 115200 bits / sec.



**Note:** For reliable operation of the RS 232, proper synchronisation of the transmission by **CTS** and **RTS** lines (according to their definitions) is required.

The **IrDA** serial interface is also available as an option. It requires dedicated hardware and the programme can be unlocked by a software code.

The functions, which are developed in order to control data flow in the serial interfaces, ensure:

- bi-directional data transmission,
- remote control of the instrument.

The user, in order to programme the serial interface, has to:

1. send "the function code",
  2. send an appropriate data file
- or
3. receive a data file.

### A.1. Input / Output transmission types

The following basic input / output transmission types (called functions) are available:

- #1 input / output of the control setting codes,
- #2 read out of the measurement results in the sound level meter (**SLM**) mode or vibration level meter (**VLM**) mode,
- #3 read out of the measurement results in **1/1 OCTAVE** or **1/3 OCTAVE** mode,
- #4 read out of the data file from the internal Flash-disc,
- #5 read out of the statistical analysis results.
- #7 special control functions,
- #9 writing the data file into the internal flash-disk.

### A.2. Function #1 – Input / Output of the control setting codes

#1 function enables the user to send the control setting codes to the instrument and read out a file containing the current control state. A list of the control setting codes is given in Tab. A.1. The format of #1 function is defined as follows:

**#1,Xccc,Xccc,(...),Xccc;**

or

**#1,Xccc,X?,Xccc,(...),X?,Xccc;**

where:

- X** - the group code, **ccc** - the code value,
- X?** - the request to send the current X code setting.

The instrument outputs in this case a control settings file for all requests X? in the following format:

**#1,X ccc,X ccc,(...),X ccc;**

In order to read out all current control settings the user should send to the device the following sequence of characters:

**#1;**

The instrument outputs in this case a file containing all control settings given in Tab. A1 in the format:

**#1,X ccc,X ccc,(...),X ccc;**

**Example:** The following sequence of characters send by the instrument as an answer for the mentioned above request:

**#1,U957,N6909,WL6.06,W6.06.2,Q0.2,Z1,V0,M1,R2,P1,F2:1,F3:2,F3:3,f0,I3:1,I2:2,I1:3,C1:1,C0:2,C2:3,E4:1,E4:2,E4:3,B0:1,B2:2,B15:3,b0,G0:1,G15:2,G7:3,g0,d200,D1s,K5,L0,r1,w0,a0,m0,s0,o6,t17,l75,n100,p20,q30,O25,k30,A0,e120,c2,h1,x3,y0,z0,T1,Y3,S0,Xx0,Xz0,Xc0,Xs3,Xn500,Xa1,Xv1,Xd1,XA0,XR0,XS0,XM0,Xm0,XP0,XD0,Xr0,Xp90,Xu1,XT0,XL75,XQ25,Xq100;**

means that:

- the **G7** is investigated (U957)
- serial number of the instrument is 6909 (N6909)
- the **LEVEL METER** has the software version number 6.06 (WL6.06)
- the software version is 6.06.2 (W6.06.2)
- the calibration factor is equal to 0.2 dB (Q0.2)
- the **SOUND METER** mode is selected currently (Z1)
- the **VOLTAGE** input is off (V0)
- the **LEVEL METER** is selected as the measurement function (M1)
- the range is **HIGH** (R2)
- the current displayed profile is 1 (P1)
- the **A** filter is selected in in **SLM** mode (F2:1)
- the **C** filter is selected in profile 2 in **SLM** mode (F3:2)
- and the **C** filter is selected in profile 3 in **SLM** mode (F3:3)
- the **HP** filter is selected for **1/1 OCTAVE** or **1/3 OCTAVE** analysis (f0)
- the **HP10** filter is selected in profile 1 in **VLM** mode (I3:1)
- the **HP3** filter is selected in profile 2 in **VLM** mode (I2:2)
- the **HP1** filter is selected in profile 3 in **VLM** mode (I1:3)
- the **FAST** detector is selected in profile 1 in **SLM** mode (C1:1)
- the **IMPULSE** detector is selected in profile 2 in **SLM** mode (C0:2)
- the **SLOW** detector is selected in profile 3 in **SLM** mode (C2:3)
- the detector **1.0s** is selected in profile 1 in **VLM** mode (E4:1)
- the detector **1.0s** is selected in profile 2 in **VLM** mode (E4:2)
- the detector **1.0s** is selected in profile 3 in **VLM** mode (E4:3)
- the logger is not filled by the results from profile 1 in **SLM** mode (B0:1)
- the **MAX** values are stored in the files of the logger from profile 2 in **SLM** mode (B2:2)
- the **RMS** values are stored in the files of the logger from profile 3 in **SLM** mode (B4:3)
- the results of **1/1** or **1/3 OCTAVE** analysis are not stored in the files of the logger in **SLM** mode (b0)
- the results coming from profile 1 are not saved in **VLM** mode in the logger's file (G0:1)
- the **PEAK**, **P-P**, **MAX** and **RMS** results from profile 2 are saved in the logger's file in **VLM** mode (G15:2)
- the **PEAK**, **P-P** and **MAX** results from profile 3 are saved in the logger's file in **VLM** mode (G7:3)
- the **1/1 OCTAVE** or **1/3 OCTAVE** analysis results are not saved in the logger's file in **VLM** mode (g0)
- the measurement results has to be stored in a file of the logger every 200 millisecond (d200)
- the integration time is equal to 1 second (D1s)
- the measurement has to be repeated 5 times (K5)

- the linear detector is selected to the **LEQ** calculations (L0)
- the narrow-band frequency analysis is performed in 22.4 kHz band (r1)
- the **HANNING** window is used during the analysis (w0)
- the linear averaging is used during the analysis (a0)
- the triggering is switched off (m0)
- the **SPL** result from the first profile is used as the triggering signal (s0)
- the sixth **1/1 OCTAVE** filter is treated as the triggering signal for **1/1 OCTAVE** analysis (o6)
- the value of the seventeenth **1/3 OCTAVE** filter is treated as a source of the triggering signal for **1/3 OCTAVE** analysis (t17)
- the trigger level in **SLM** mode is equal to 75 dB (l75)
- the trigger level in **VLM** mode is equal to 100 dB (n100)
- the number of the records before the triggering saved in a file of the logger is equal to 20 (p20)
- the number of records registered after the moment in which the measured signal does not fulfil any longer the condition of the triggering is equal to 30 (q30)
- the gradient in **SLM** mode in **MEASURE TRIGGER** is equal to 25 dB/ms (O25)
- the gradient in **VLM** mode in **MEASURE TRIGGER** is equal to 30 dB/ms (k30)
- the spectrum analysis is performed in a full band (A0)
- the exposure time is equal to 120 minutes (e120)
- the criterion level is equal to 84 dB (c2)
- the threshold level is equal to 75 dB (h1)
- the exchange rate is equal to (x3)
- the **FFT** analysis is performed using 1920 lines (y0)
- the **FFT** logger is switched off (z0)
- the logger is switched on (T1)
- the delay of the start of the measurements is equal to 3 seconds (Y3)
- the instrument is in the Stop state (S0)
- the **ANALOG OUT** is selected for **MODE** in the **EXT. I/O SETUP** (Xx0)
- the **TRIGGER PULSE** is selected as the **FUNCTION** in the **EXT. I/O SETUP** (Xz0)
- the **LOW** is selected as the **ACTIVE LEVEL** in the **EXT. I/O SETUP** (Xc0)
- the **PEAK** value from the first profile is selected as the **SOURCE** in the **EXT. I/O SETUP** (Xs3)
- the **ALARM LEVEL** set in the **EXT. I/O SETUP** is equal to 50.0 dB (Xn500)
- the reference level for the acceleration measurements is equal to  $1 \mu\text{m/s}^2$  (Xa1)
- the reference level for the velocity measurements is equal to 1 nm/s (Xv1)
- the reference level for the acceleration measurements is equal to 1 pm (Xd1)
- the auto save is switched off (XA0)
- the RAM file is switched off (XR0)
- the statistics are not saved (XS0)
- the saving of Max spectrum is switched off (XM0)
- the saving of Min spectrum is switched off (Xm0)
- the **REPLACE** in **SAVE OPTIONS** is switched off (XP0)
- the **DIRECT SAVE** in **SAVE OPTIONS** is switched off (XD0)
- the **RPM** measurement is switched on (Xr0)
- the **PULSE** in the **RPM** measurement is set to 90 pulses/rotation (Xp90)
- the **RPM** is measured in RPM units (Xu1)
- the **TRIGGER** in the **LOGGER TRIGGER** is set to **OFF** (XT0)
- the **LEVEL** in the **LOGGER TRIGGER** is set to 75 dB (XL75)
- the **PRE** in the **LOGGER TRIGGER** is set to 25 (XQ25)
- the **POST** in the **LOGGER TRIGGER** is set to 100 (Xq100).



**Note:** All bytes of that transmission are ASCII characters.

### A.3. Function #2 – Measurement results read-out in the level meter or dose meter modes

#2 function enables one to read out the current measurement result from the selected profile in the sound or vibration **LEVEL METER** or **DOSE METER** modes.



**Notice:** This function can also be programmed while measurements are taking place. In this case, the RMS values measured **after entering #2 function** are sent out.

**#2 function** has the format defined as follows:

**#2,p,X?,X?,X?,(...),X?;**

where:

**X** - the code of the result,

**p** - the number of the profile (1, 2 or 3).



**Notice:** After finishing the measurement, **#2 function** is no longer active and has to be reprogrammed in order to read-out successive measurements.

The instrument sends the values of results in the format defined as follows:

**#2,p,Xccc,Xccc,Xccc,...,Xccc;** (where **p** - the number of the profile: 1, 2 or 3)

or

**#2,?;** (when the results are not available).

The codes of the results in the case of **SLM** mode are defined as follows:

- v** the under-range flag (ccc equals to 0 when the overload did not occur, 2 when the under-range took place during the last measurement period but did not occur in the last second of the measurement and 3 when the under-range took place during the last measurement period and it lasted in the last second of the measurement);
- V** the overload flag (ccc equals to 0 or 1);
- T** time of the measurement (ccc – value in seconds);
- P** the **PEAK** value (ccc – the value in dB);
- M** the **MAX** value (ccc – the value in dB);
- N** the **MIN** value (ccc – the value in dB);
- S** the **SPL** result (ccc – the value in dB);
- R** the **LEQ** result (ccc – the value in dB).
- U** the **SEL** result (ccc – the value in dB);
- B(k)** the **Lden** result (ccc – the value in dB; k – flag determining the kind of the result);
- I(nn)** the **LEPd** result (ccc – the value in dB, nn – the value of Exposure Time in minutes);
- Y** the **Ltm3** result (ccc – the value in dB);
- Z** the **Ltm5** result (ccc – the value in dB);
- L(nn)** the value L of the nn statistics (ccc – the value in dB).



**Notice:** In the case of **Lden**, the value **k** placed in the parenthesis after the code **B**, denotes the kind of the currently measured result. The kind of the **Lden** result depends on the time during which the measurements were performed (**d** denotes day, **e** denotes evening and **n** denotes night). The corresponding values of **k** parameter and the kind of the measured **Lden** result are presented below:

**k** = 1 **Ld** result, **k** = 2 **Le** result, **k** = 3 **Lde** result, **k** = 4 **Ln** result,  
**k** = 5 **Lnd** result, **k** = 6 **Len** result, **k** = 7 **Lden** result.

The codes of the results from the **DOSE METER** mode are defined as follows:

- v** the under-range flag (ccc equals to 0 when the overload did not occur, 2 when the under-range took place during the last measurement period but did not occur in the last second of the measurement and 3 when the under-range took place during the last measurement period and it lasted in the last second of the measurement);
- V** the overload flag (ccc equals to 0 or 1);
- T** time of the measurement (ccc – value in seconds);
- P** the **PEAK** value (ccc – the value in dB);
- M** the **MAX** value (ccc – the value in dB);
- N** the **MIN** value (ccc – the value in dB);
- S** the **SPL** result (ccc – the value in dB);
- D** the **DOSE** result (ccc – the value in %);
- d** the **D\_8h** result (ccc – the value in %);
- A** the **LAV** result (ccc – the value in dB);
- R** the **LEQ** result (ccc – the value in dB);
- U** the **SEL** result (ccc – the value in dB);
- u** the **SEL8** result (ccc – the value in dB);
- E** the **E** result (ccc – the value in Pa<sup>2</sup>h);
- e** the **E\_8h** result (ccc – the value in Pa<sup>2</sup>h);
- I(nn)** the **LEPd** result (ccc – the value in dB, nn – the value of Exposure Time in minutes);
- J** the **PSEL** result (ccc – the value in dB);
- Y** the **Ltm3** result (ccc – the value in dB);
- Z** the **Ltm5** result (ccc – the value in dB);
- L(nn)** the value L of the nn statistics (ccc – the value in dB).

The codes of the results in the case of **VLM** mode are defined as follows:

- v** the under-range flag (ccc equals to 0 when the overload did not occur, 2 when the under-range took place during the last measurement period but did not occur in the last second of the measurement and 3 when the under-range took place during the last measurement period and it lasted in the last second of the measurement);
- V** the overload flag (ccc equals to 0 or 1);
- T** time of the measurement (ccc – value in seconds);
- P** the **PEAK** value (ccc – the value in dB);
- Q** the **P\_P** value (ccc – the value in dB);
- M** the **MAX** value (ccc – the value in dB);
- R** the **RMS** value (ccc – the value in dB);
- H** the **VDV** value (ccc – the value in dB).

The exemplary results of the instrument's response after sending to it the following sequence of characters: **#2,1**; coming from the first profile are given below:

a) for the case of the **SLM** mode:

**#2,1,v2,V0,T39,P125.4,M107.0,N20.6,S81.7,R102.1,U118.0,B(4)112.1,I(480)102.1,Y103.9,Z105.4,L(01)107.9,L(10)107.6,L(20)107.2,L(30)102.8,L(40)99.0,L(50)96.7,L(60)82.5,L(70)54.5,L(80)20.9,L(90)20.4;**

b) for the case of the **DOSE METER** mode:

**#2,1,v3,V0,T60,P116.0,M113.0,N20.6,S20.9,D14,d6635,A98.2,R98.2,U116.0,u142.8,E0.04,e21.14,I(480)98.2,J71.4,Y103.1,Z102.9,L(01)113.5,L(10)96.1,L(20)82.8,L(30)21.3,L(40)20.8,L(50)20.7,L(60)20.5,L(70)20.4,L(80)20.2,L(90)20.1;**

c) and for the case of the **VLM** mode:

**#2,1,v0,V0,T1,P93.9,Q99.7,M45.6,R45.6,H85.0;**



**Notice:** The presented above order of the measurement results sent out by the instrument does not depend on the sequence of the characters sent to the unit.

**Example:** After sending to the instrument the string:

**#2,1,T?,R?,V?,P?,L?;**

the unit sends out the results of measurement coming from the first profile in predefined, described above, order:

**#2,1,V0,T39,P125.4,R102.1,L(01)107.9,L(10)107.6,L(20)107.2,L(30)102.8,L(40)99.0,L(50)96.7,L(60)82.5,L(70)54.5,L(80)20.9,L(90)20.4;**



**Notice:** The value displayed on the screen during the result's presentation is sent out from the instrument in the case when **nn** is not given after **X** character.



**Notice:** All bytes of that transmission are ASCII characters.

#### A.4. Function #3 – Read-out of the measurement results in 1/1 OCTAVE or 1/3 OCTAVE mode

#3 function enables one to read out the current measurement results in **1/1 OCTAVE** or **1/3 OCTAVE** mode.

**#3 function** format is defined as follows:

**#3;**

The device responds, sending the last measured spectrum (when the instrument is in STOP state) or currently measured spectrum (when the instrument is in RUN state) in the following format:

**#3;<Status Byte> <LSB of the transmission counter> <MSB of the transmission counter> <data byte> (...) <data byte>**

**Status Byte** gives the information about the current state of the instrument.

D7	D6	D5	D4	D3	D2	D1	D0
----	----	----	----	----	----	----	----

where:

- D7= 0 means that "overload does not happen",
- = 1 means that "overload appeared",
- D6= 0 means that "spectrum is not averaged ",
- = 1 means that "spectrum is averaged ",
- D5= 0 the instantaneous current result (RUN State),
- = 1 the final result (STOP State),
- D0 to D4 reserved bits.



**Note:** The measurement result is coded in binary form as **dB•10** (e.g. 34.5 dB is sent as binary number 345).



## A.5. Function #4 – Read-out of the data file from the internal Flash-Disc

#4 function enables the user to read-out the data file from the internal Flash-disc memory. The data file formats are given in Appendix B.

**#4 function** formats are defined as follows:

**#4,0,\;** the file containing the catalogue,  
**#4,0,?;** the count of the files,  
**#4,0,index,count;** the part of the file containing the catalogue,

where:

**index** - first record,

**count** - number of records in the catalogue.

**#4,1,fname;** the file containing the measurement results,  
**#4,1,fname,?;** file size,  
**#4,1,fname,offset,length;** the part of the file containing the measurement results,  
**#4,1<address,length;** the part of the file containing the measurement results,

where:

**fname** - name containing not more than eight-characters,

**offset** - offset from the beginning of the file,

**length** - number of bytes to read,

**address** - absolute internal address,

**#4,2,fname;** the file containing the logger results,  
**#4,2,fname,?;** file size,  
**#4,2,fname,offset,length;** the part of file containing the logger results,

where:

**fname** - name containing not more than eight-characters

**offset** - offset from the beginning of the file,

**length** - number of bytes to read,

**#4,3;** the RAM file,  
**#4,3,?;** size of RAM file,  
**#4,3,offset,length;** the part of RAM file,

where:

**offset** - offset from the beginning of the RAM file,

**length** - number of bytes to read,



**Notice:** The "\" character is treated as the file name of the catalogue and must be sent to the instrument.

All data words are sent as <LSB>,<MSB>.

When an error is detected in the file specification or data, the instrument will send:

**#4,?;**

The catalogue of the files is a set of the records containing 16 words (16 bits each). Each record describes one file saved in the instrument's Flash-disc. The record structure is as follows:

words 0 - 3    8 characters of the file name,  
 word 4        file type (binary number),  
 word 5        reserved,  
 word 6        the least significant word of the file size,  
 word 7        the most significant word of the file size,  
 words 8 - 15   reserved.

## A.6. Function #5 – Statistical analysis results read-out

#5 function enables one to read out the statistical analysis results.

**#5 function** format is defined as follows:

**#5,p;**

where:

**p** the source of the statistical analysis results, for  $p = 1, 2$  or  $3$  it is the corresponding profile and for  $p = 0$  - the results obtained during **1/1 OCTAVE** or **1/3 OCTAVE** analysis.

The device responds, sending the current classes of the statistics in the following format:

**#5,p;<Status Byte> <LSB of the transmission counter> <MSB of the transmission counter> <NofClasses><BottomClass><ClassWidth><Counter of the class> (...) <Counter of the class>**

**Status Byte** gives the information about the current state of the instrument.

D7	D6	D5	D4	D3	D2	D1	D0
----	----	----	----	----	----	----	----

where:

D7 = 0 means "overload does not happen",  
 = 1 means "overload appeared",  
 D6 = 1 reserved,  
 D5 = 0 the instantaneous current result (RUN State),  
 = 1 the final result (STOP State),  
 D0 to D4 reserved bits.



to zero.

**Notice:** There is not any succeeding transmission in the case when the **Status Byte** is equal

The **transmission counter** is a two-byte word denoting the number of the remaining bytes to be transmitted. Its value is calculated from the formulae:

**Transmission counter =  $6+n * (4 * \text{the number of the classes in the statistics})$**

where:

- $n$  the number of the transmitted statistics. For  $p = 1, 2$  or  $3$  only one statistic is transmitted ( $n = 1$ ). For  $p = 0$  the number of the transmitted statistics depends on the measurement function and
- in the case of **1/1 OCTAVE** analysis  $n$  is equal to the number of the analysis results (NOct – cf. App. B) plus the number of the **TOTAL** values for this type of analysis (NOctTot);
  - in the case of **1/3 OCTAVE** analysis  $n$  is equal to the number of the analysis results (NTer – cf. App. B) plus the number of the **TOTAL** values for this type of analysis (NTerTot).

**NofClasses** is a two-byte word denoting the number of classes in the statistic.

**BottomClass** is a two-byte word denoting the lower limit of the first class (\*10 dB).

**ClassWidth** is a two-byte word denoting the width of the class (\*10 dB).

**Counter of the class** is a four-byte word containing the number of the measurements belonging to the current class.



**Notice:** The bytes in the words are sent according to the scheme **<LSByte>..**MSByte**>**.

## A.7. Function #6 – Remote setting of the user filters

Function **#6** enables one to send to the instrument the coefficients of the user filters. In the available formats description of **#6** functions the following symbols are used:

<b>type</b>	- 0 for the vibration filters, - 1 for the acoustic filters,
<b>name, name<sub>1</sub>, name<sub>2</sub></b>	- filter names given by the user,
<b>v</b>	- real type value, expressed in [dB],
<b>first</b>	- integer type value (number of the coefficient in the user filter),
<b>pos</b>	- integer type value (Total value number),
<b>avd</b>	- for the vibration filters: 0 - Acc, 1- Vel, 2 - Dil, - for the acoustic filters, this parameter is always equal to 0,
<b>cal</b>	- the calibration coefficient given as the real number expressed in [dB].
<b>chn</b>	- channel number (1, 2, 3 or 4)

**#6 function** formats are defined as follows:

**#6,type,L;**

This function returns the list of the defined (existing in the instrument) filters in the following format:

**#6,type,n,name<sub>1</sub>, ... ,name<sub>n</sub>;**

**#6,type,W,name,v,v,...,v;**

This function sets the coefficients of the new user filter named as **name**. The **name** parameter should be unique (in the instrument there is not any other filter with the same name, otherwise it will be an error). The function answers in the format: **#6;**

**#6,type,R,name;**

This function returns the coefficients of the user filter named as **name**. If the **name** filter does not exist, an error occurs. The function's answer is in the following format: **#6,type,n,v<sub>1</sub>,v<sub>2</sub>, ... ,v<sub>n</sub>;**

**#6,type,D,name;**

This function deletes from the instrument the user filter named as **name**. If the **name** filter does not exist, an error occurs. The function answers in the format: **#6;**

**#6,type,S,name,v,v,...,v;**

This function sets the user filter named as **name**. If the **name** filter already exists, its coefficients are redefined. If the **name** filter does not exist, the filter is created. The function answers in the format: **#6;**

**#6,type,C,name,first,v,v,...,v;**

This function sets the coefficients in the user filter named as **name** starting from the first position. If the **name** filter does not exist, an error occurs. The function answers in the format: **#6;**

**#6,type,N,name<sub>1</sub>,name<sub>2</sub>;**

This function changes the name of the user filter from **name<sub>1</sub>** to **name<sub>2</sub>**. The function answers in the format: **#6;**

**#6,type,@,chn,L;**

This function returns the names of the user filters, assigned to the channel **chn** consecutive **TOTAL** values, in the following format: **#6,type,chn,3,name<sub>1</sub>,name<sub>2</sub>,name<sub>3</sub>;**

**#6,type,@,chn,pos,?;**

This function returns the description record of the user filter assigned to the **pos TOTAL** value of channel **chn** in the following format: **#6,type,@,chn,pos,name,avd,cal;** (the description record contains: the name of the filter, its type and the calibration coefficient).

**#6,type,@,chn,pos,\*;**

This function recovers the predefined filter for the **pos TOTAL** value of channel **chn** and answers in the following format: **#6,type,@,chn,pos,name,avd,cal;**

**#6,type,@,chn,pos,name,avd,cal;**

This function sets the description record of the user filter assigned to the **pos TOTAL** value of channel **chn** in the following format: **#6,type,@,chn,pos,name,avd,cal;**

The returned parameters: **name**, **avd** and **cal** are set in the description record after the execution of the function. In the case of an error they can differ from the current parameters of the function.



**Notice:** In the case of an error all these functions return the following sequence of the characters: **#6?;**

## A.8. Function #7 – Special control functions

Function **#7** enables the user to perform special control functions. **Some of them should be used with the extreme care.**

**#7 function** formats are defined as follows:

**#7,CB;**

This function clears the logger memory - all logger files will be deleted. The function returns **#7,CB;**  
This function is not accepted while the instrument is in the RUN state.

**#7,BF;**

This function returns logger memory free space in the format: **#7,BF,dddddd;** (dddddd - number of bytes in decimal format).

**#7,BN;**

This function returns the number of logger files created to the current time in the format: **#7,BN,dddddd;** (dddddd - number of logger files in decimal format).

**#7,RT;**

This function returns current real time clock settings in the format: **#7,RT,hh,mm,ss,DD,MM,YYYY;** where **hh:mm:ss** denote the time and **DD/MM/YYYY** gives the date.

**#7,RT,hh,mm,ss,DD,MM,YYYY;**

This function sets the current real time clock and returns the following sequence of characters: **#7,RT;**

**#7,AS;**

This function returns current real time and date settings for the AutoStart function in the format: **#7,AS,e,hh,mm,DD,Rhh,Rmm;** where **e=1** if AutoStart function is switched ON in SINGLE mode, **e=2** if AutoStart function is switched ON in MULTI mode or **0** if it is switched OFF, **hh:mm** gives the time, **DD** gives the day for the current date, **Rhh,Rmm** gives the repetitions time.

**#7,AS,e,hh,mm,DD,Rhh,Rmm;**

This function uses the given time and date settings for AutoStart function and returns the following sequence of characters: **#7,AS;**

**#7,IC;**

Reserved.

**#7,SC;**

Reserved.

**#7,DA;**

This function deletes all files (result files and setup files). The function returns **#7,DA;** This function is not accepted while the instrument is in the RUN state.

**#7,LP;**

Reserved.

**#7,BP;**

Reserved.

**#7,ME;**

This function returns the size of internal flash memory in format **#7,ME,FlashMB;**

**#7,LS,setup\_name;**

This function loads setup and writes settings into EEPROM. The selected file must exist. The function returns **#7,LS;**

**#7,SS;**

This function creates setup file based on the current settings. The function returns **#7,SS;**

**#7,HO;**

This function enables one to calibrate the instrument via the Harvest SPE Modems.

**#7,CS;**

This function clears current setup.

**#7,DF;****#7,DF,file\_name;****#7,DF,file\_name<address>;**

This function deletes all result files or deletes file specified by **file\_name** or internal flash address.

**#7,DS;****#7,DS,file\_name;****#7,DS,file\_name<address>;**

This function deletes all setup files or deletes file specified by **file\_name** or internal flash address.

**#7,US;**

This function returns unit subversion.

**#7,BS;**

This function returns battery state in percentage. If the instrument is powered from the external power, this function return -1 or if it is powered from the USB interface, the function returns -2.

**#7,DL;**

This function returns day time limits in format **#7,DL,x;**

**#7,DL,x;**

This function enables ( x = 1 ) or disables ( x = 0 ) day time limits and returns the following sequence of characters: **#7,DL;**

**#7,SL;**

This function returns all statistical levels in the format **#7,SL,sl1,sl2,sl3,sl4,sl5,sl6,sl7,sl8,sl9,sl10;**

**#7,SL,sl\_index,sl\_level;**

This function sets statistical levels where **sl\_index** is the statistical index, **sl\_level** is the statistical level and it returns the following sequence of characters: **#7,SL;**

**#7,MC;**

This function returns microphone compensation in the format **#7,MC,x;**

**#7,MC,xxx;**

This function sets the microphone compensation and returns the following sequence of characters:

**#7,MC;** where **xxx** means:

x=0: Off

x=1: FREE FIELD

x=2: DIFFUSE FIELD

x=3: OUTDOOR ENVIRONMENT

x=4: OUTDOOR AIRPORT

x=5: EXTENSION CABLE

**#7,LA;**

This function returns the current language in the format: **#7,LA,xx;** where **xx** is language codes: **EN** (English), **IT** (Italian), **PL** (Polish), **RU** (Russian), **HU** (Hungarian), **TU** (Turkish), **NL** (Flemish), **FR** (French), **SP** (Spanish), **DE** (German).

**#7,PO;**

This function powers off the instrument.

**#7,BD;**

This function returns baud rate in the format **#7,BD,xxx;**

**#7,BD,xxx;**

This function sets baud rate and returns the following sequence of characters: **#7,BD;** where **xxx** means:

xxx=8: 115200

xxx=7: 57600

xxx=6: 38400

xxx=5: 19200

xxx=4: 9600

xxx=3: 4800  
xxx=2: 2400  
xxx=1: 1200

**#7,TO;**

This function returns RS232 time out in the format **#7,TO,xxx;**

**#7,TO,xxx;**

This function sets RS232 time out in seconds where **xxx**  $\in (1 \div 60)$  and returns the following sequence of characters: **#7,TO;**

**#7,WS;**

This function returns states of warnings if results are not saved in the format **#7,WS,x;**

**#7,WS,x;**

This function enables (  $x = 1$  ) or disables (  $x = 0$  ) the warnings if the results are not saved and it returns the following sequence of characters: **#7,WS;**

**#7,RC;**

This function returns the transition type for remote communication in the format **#7,RC,xxx;**

**#7,RC,xxx;**

This function sets the transition type for remote communication and returns the following sequence of characters: **#7,RC;** where **xxx** means:

xxx=0: Off  
xxx=1: Continuous  
xxx=2: Packet

**#7,RP;**

This function returns the packet size for remote communication in the format **#7,RP,xxx;**

**#7,RP,xxx;**

This function sets the packet size for remote communication and returns the following sequence of characters: **#7,RP;** The possible values are as follows: 1024, 512, 256, 128, 64.

**#7,WU;**

This function returns the vibration unit type in the format **#7,WU,x;**

**#7,WU,x;**

This function sets the vibration unit type: non-metric (  $x = 0$  ), or metric (  $x = 1$  ) and returns the following sequence of characters: **#7,WU;**

**#7,RA;**

This function returns the ACC reference levels in the format **#7,RA,xxx;**

**#7,RA,xxx;**

This function sets the ACC reference levels, where **xxx**  $\in (1 \div 100)$  and returns the following sequence of characters: **#7,RA;**

**#7,RV;**

This function returns the VEL reference levels in the format **#7,RV,xxx;**

**#7,RV,xxx;**

This function sets the VEL reference levels, where **xxx**  $\in (1 \div 100)$  and returns the following sequence of characters: **#7,RV;**

**#7,RD;**

This function returns the DIL reference levels in the format **#7,RD,xxx;**

**#7,RD,xxx;**

This function sets the DIL reference levels, where **xxx**  $\in (1 \div 100)$  and returns the following sequence of characters: **#7,RD;**

**#7,MB;**

This function returns the tonality maximum band in the format **#7,MB,xxx;**

**#7,MB,xxx;**

This function sets the tonality maximum band in percentage, where **xxx**  $\in (5 \div 25)$  and returns the following sequence of characters: **#7,MB;**

**#7,TS;**

This function returns the tonality tone seek in the format **#7,TS,xxx;**

**#7,TS,xxx;**

This function sets the tonality tone seek in dB, where **xxx**  $\in (10 \div 50)$  and returns the following sequence of characters: **#7,TS;**

**#7,RE;**

This function returns the tonality regression in the format **#7,RE,xxx;**

**#7,RE,xxx;**

This function sets the tonality regression in percentage, where **xxx**  $\in (50 \div 100)$  and returns the following sequence of characters: **#7,RE;**

**#7,TB;**

This function returns the tonality tone band in the format **#7,TB,xxx;**

**#7,TB,xxx;**

This function sets the tonality tone band in dB, where **xxx**  $\in (10 \div 60)$  and returns the following sequence of characters: **#7,TB;**

**#7,SM;**

This function returns the RT60 smoothing in the format **#7,SM,xxx;**

**#7,SM,xxx;**

This function sets the RT60 smoothing, where **xxx**  $\in (0 \div 15)$  and returns the following sequence of characters: **#7,SM;**



**#7,NM;**

This function returns the RT60 noise margin in the format **#7,NM,xxx;**

**#7,NM,xxx;**

This function sets the RT60 noise margin in dB, where **xxx**  $\in (0 \div 200)$  and returns the following sequence of characters: **#7,NM;**

**#7,AV;**

This function returns the RT60 averaging in the format **#7,AV,x;**

**#7,AV,x;**

This function enables (  $x = 1$  ) or disables (  $x = 0$  ) the RT60 averaging and returns the following sequence of characters: **#7,AV;**

**#7,AC,1;**

This function clears the RT60 averaging and returns the following sequence of characters: **#7,AC;**

**#7,RR;**

This function returns the real time results mode in the format **#7,RR,xxx;**

**#7,RR,xxx;**

This function sets the real time results mode: samples (  $xxx = 0$  ), or logger results (  $xxx = 1$  ) and returns the following sequence of characters: **#7,RR;**

**#7,WF;**

This function returns the state of the **USB DISK FREE SPACE** warning. If the USB disk connected to the instrument has less free space than required to save measurement data, the function returns the following sequence of characters **#7,WF,x;**

**#7,WF,x;**

This function enables (  $x = 1$  ) or disables (  $x = 0$  ) the **USB DISK FREE SPACE** warning and returns the following sequence of characters: **#7,WF;**

**#7,WM;**

This function returns the state of the **MIN FREE SPACE** warning. If the USB disk connected to the instrument has less free space than set in this position, the function returns the following sequence of characters **#7,WM,xxx;**

**#7,WM,xxx;**

This function sets the value in the **MIN FREE SPACE** position of the **WARNINGS** sub-list (*path: MENU / SETUP / WARNINGS MIN FREE SPACE*), **xxx**  $\in (1 \div 1024)$  MB and returns the following sequence of characters: **#7,WM;**

**#7,LB;**

This function returns the name of last logger in format **#7,LB,logger\_name;**

**#7,IE;**

This function returns the IEPE CURRENT setting in format **#7,IE,x;**

**#7,IE,x;**

This function sets IEPE CURRENT amperage to 1.5 mA ( x = 0 ) or 4.5 mA ( x = 1 ) and returns the following sequence of characters: **#7,IE;**

For the unknown function and/or in the case of the other error, all these functions return the following sequence of characters: **#7,?;**

**A.9. Function #9 – Write-in of the data file into the internal Flash-Disc**

#9 function enables the user to write-in the data file into the internal Flash-disc memory. The data file formats are given in Appendix B.

**#9 function** formats are defined as follows:

**#4,2,FILE\_LENGTH,DATA** the setup file

where:

**FILE\_LENGTH**                      length of the file in bytes,  
**DATA**                                binary content of the file.

**A.10. Control setting codes**

The control setting codes used in the **G7** instrument (the internal software revision 6.04) are given in the table below.

**Table A.1. Control setting codes**

Group name	Group code	Code description
Unit type	<b>U</b>	U957 (read only)
Serial number	<b>N</b>	Nxxxx (read only)
LEVEL METER software version	<b>W</b>	WLxxx xxx - revision number (read only)
Software version	<b>WL</b>	Wyyy yyy - revision number (read only)
Calibration factor	<b>Q</b>	Qnnnn nnnn-real number with the value of the calibration factor $\in (-99.9 \div 99.9)$
Meter mode	<b>Z</b>	Z0 - <b>VIBRATION METER</b> Z1 - <b>SOUND METER</b>
VoltageInput	<b>V</b>	VoltageInput: V0 - off V1 - on
Measurement function	<b>M</b>	M1 - <b>LEVEL METER</b> M2 - <b>1/1 OCTAVE analyser</b> M3 - <b>1/3 OCTAVE analyser</b> M4 - <b>DOSE METER</b> M6 - <b>FFT analyser</b> M8 - <b>RT60</b>
Range	<b>R</b>	R1 - <b>LOW</b> R2 - <b>HIGH</b>
Results displayed on the screen	<b>P</b>	P1 - <b>PROFILE 1</b> (read only) P2 - <b>PROFILE 2</b> (read only) P3 - <b>PROFILE 3</b> (read only)

Filter type in profile n in <b>SLM</b> mode	<b>F</b>	F1:n <b>Z</b> filter for profile n F2:n <b>A</b> filter for profile n F3:n <b>C</b> filter for profile n
Filter type in <b>1/1 OCTAVE</b> , <b>1/3 OCTAVE</b> or <b>FFT</b> analysis	<b>f</b>	f1 - <b>Z</b> filter f2 - <b>A</b> filter f3 - <b>C</b> filter
Filter type in profile n in <b>VLM</b> mode	<b>I</b>	I1:n <b>HP1</b> filter for profile n I2:n <b>HP3</b> filter for profile n I3:n <b>HP10</b> filter for profile n I4:n <b>Vel11</b> filter for profile n I5:n <b>Vel3</b> filter for profile n I6:n <b>Vel10</b> filter for profile n I7:n <b>VelMF</b> filter for profile n I8:n <b>Dil1</b> filter for profile n I9:n <b>Dil3</b> filter for profile n I10:n <b>Dil10</b> filter for profile n I15:n <b>KB</b> filter for profile n I16:n <b>Wk</b> filter for profile n I17:n <b>Wd</b> filter for profile n I18:n <b>Wc</b> filter for profile n I19:n <b>Wj</b> filter for profile n I20:n <b>Wm</b> filter for profile n I21:n <b>Wh</b> filter for profile n I22:n <b>Wg</b> filter for profile n I23:n <b>Wb</b> filter for profile n
Detector type in profile n in <b>SLM</b> mode	<b>C</b>	C0:n - <b>IMPULSE</b> detector in profile n C1:n - <b>FAST</b> detector in profile n C2:n - <b>SLOW</b> detector in profile n
Detector type in profile n in <b>VLM</b> mode	<b>E</b>	E0:n - <b>100ms</b> detector in profile n E1:n - <b>125ms</b> detector in profile n E2:n - <b>200ms</b> detector in profile n E3:n - <b>500ms</b> detector in profile n E4:n - <b>1.0s</b> detector in profile n E5:n - <b>2.0s</b> detector in profile n E6:n - <b>5.0s</b> detector in profile n E7:n - <b>10.0s</b> detector in profile n
Logger type in profile n in <b>SLM</b> mode	<b>B</b>	Bx:n - x - sum of the following flags flags: 1 - logger with <b>PEAK</b> values in profile n 2 - logger with <b>MAX</b> values in profile n 4 - logger with <b>MIN</b> values in profile n 8 - logger with <b>RMS</b> values in profile n
Storing the results of <b>1/1 OCTAVE</b> or <b>1/3 OCTAVE</b> analysis in logger's file in <b>SLM</b> mode	<b>b</b>	b0 - switched off ([ <b>I</b> ]) b1 - switched on ([ <b>√</b> ])
Logger type in profile n in <b>VLM</b> mode	<b>G</b>	Gx:n - x - sum of the following flags flags: 1 - logger with <b>PEAK</b> values in profile n 2 - logger with <b>P-P</b> values in profile n 4 - logger with <b>MAX</b> values in profile n 8 - logger with <b>RMS</b> values in profile n
Storing the results of <b>1/1 OCTAVE</b> or <b>1/3 OCTAVE</b> analysis in logger's file in <b>VLM</b> mode	<b>g</b>	g0 - switched off ([ <b>I</b> ]) g1 - switched on ([ <b>√</b> ])

Logger step	<b>d</b>	dnnn    nnn number in milliseconds $\in (2, 5, 10, 20, 25, 50, 100, 200, 500, 1000)$ dnns    nn number in seconds $\in (1 \div 60)$ dnnm    nn number in minutes $\in (1 \div 60)$
Integration period	<b>D</b>	D0 -    infinity (measurement finished by pressing the <b>&lt;STOP&gt;</b> push-button or remotely - by sending S0 control code) Dnns    nn number in seconds Dnnm    nn number in minutes Dnnh    nn number in hours
Repetition of the measurement cycles (RepCycle)	<b>K</b>	K0 -    infinity (measurement finished by pressing the <b>&lt;STOP&gt;</b> push-button or remotely - by sending S0 control code) ..... Knnnn - nnnn number of repetitions $\in (1 \div 1000)$
Detector type in the <b>LEQ</b> function	<b>L</b>	L0 - <b>LINEAR</b> L1 - <b>EXPONENTIAL</b>
<b>FFT</b> analysis band	<b>r</b>	r1 - <b>FFT</b> analysis band = <b>22.4 kHz</b> r2 - <b>FFT</b> analysis band = <b>11.2 kHz</b> r3 - <b>FFT</b> analysis band = <b>5.6 kHz</b> r4 - <b>FFT</b> analysis band = <b>2.8 kHz</b> r5 - <b>FFT</b> analysis band = <b>1.4 kHz</b> r6 - <b>FFT</b> analysis band = <b>700 Hz</b> r7 - <b>FFT</b> analysis band = <b>350 Hz</b> r8 - <b>FFT</b> analysis band = <b>175 Hz</b> r9 - <b>FFT</b> analysis band = <b>87.5 Hz</b>
Window in <b>FFT</b> analysis	<b>w</b>	w0 - <b>HANNING</b> w1 - <b>RECTANGLE</b> w2 - <b>FLAT TOP</b> w3 - <b>KAISER BESSEL</b>
Averaging in <b>FFT</b> analysis	<b>a</b>	a0 - <b>LINEAR</b> a1 - <b>EXPONENTIAL</b>
Measure Triggering mode (TriggerMode)	<b>m</b>	m0 -    switched off ( <b>OFF</b> ) m1 - <b>SLOPE +</b> m2 - <b>SLOPE -</b> m3 - <b>LEVEL +</b> m4 - <b>LEVEL -</b> m5 - <b>GRAD+</b>
Source of the measure triggering signal for measurement functions: M1, M6, M7 (TriggerSource)	<b>s</b>	s0 - <b>RMS</b> s1 - <b>EXT. IO</b>
Source of the measure triggering signal for measurement function M2 (TriggerOctSource)	<b>o</b>	o0 - <b>SPL(1)</b> ( <b>SPL</b> from the first profile) onn -    nn number of the filter in <b>1/1 OCTAVE</b> spectra $\in (8 \div \text{NOct})$ ; Noct = 15 - number of filters in <b>1/1 OCTAVE</b> analysis. There are respectively: 8 -    125 Hz 9 -    250 Hz ... 15 -    16 kHz

Source of the measure triggering signal for measurement function M3 (TriggerTerSource)	<b>t</b>	t0 - <b>SPL(1)</b> (SPL from the first profile) tnn - nn number of the filter in <b>1/3 OCTAVE</b> spectra $\in (23 \div \text{Nter})$ , Nter=45 - number of filters in <b>1/3 OCTAVE</b> analysis. There are respectively: 23 - 125 Hz 24 - 160 Hz ... 45 - 20 kHz
Measure Triggering level (TriggerLev) in <b>SLM</b> mode	<b>l</b>	lenn - nnn level in dB $\in (24 \div 136)$
Measure Triggering level (TriggerLev) in <b>VLM</b> mode	<b>n</b>	nxxx - xxx level in dB $\in (60 \div 200)$
Number of records taken into account before the fulfilment of the triggering condition (TriggerPre)	<b>p</b>	pnn - nn number of records saved in the logger before the triggering condition; nn $\in (0 \div 50)$
Number of records taken into account after the fulfilment of the triggering condition (TriggerPost)	<b>q</b>	qnnn - nnn number of records saved in the logger after the fulfilment of the triggering condition; nn $\in (0 \div 200)$
Measure Triggering gradient in <b>SLM</b> mode	<b>o</b>	Onnn - nnn gradient in dB/ms $\in (1 \div 100)$
Measure Triggering gradient in <b>VLM</b> mode	<b>k</b>	knnn - nnn gradient in dB/ms $\in (1 \div 100)$
Spectrum Band	<b>A</b>	A0 - <b>FULL</b> A1 - <b>AUDIO</b>
Exposure Time	<b>e</b>	ennn - nnn time in minutes $\in (1 \div 480)$
Criterion Level	<b>c</b>	c1 - 80 dB c2 - 84 dB c3 - 85 dB c4 - 90 dB
Threshold Level	<b>h</b>	h0 - None h1 - 75 dB h2 - 80 dB h3 - 85 dB h4 - 90 dB
Exchange Rate	<b>x</b>	x2 - 2 dB x3 - 3 dB x4 - 4 dB x5 - 5 dB
FFT lines	<b>y</b>	y0 - 1920 y1 - 960 y2 - 480
FFT logger	<b>z</b>	z0 - switched off ( <b>[ ]</b> ) z1 - switched on ( <b>[√]</b> )
Logger	<b>T</b>	T0 - switched off ( <b>[ ]</b> ) T1 - switched on ( <b>[√]</b> )
Delay in the start of measurement	<b>Y</b>	Ynn nn delay given in seconds $\in (0 \div 59)$
State of the instrument (Stop or Start)	<b>S</b>	S0 - <b>STOP</b> S1 - <b>START</b>

Extended IO Mode	<b>Xx</b>	Xx0 - <b>ANALOG OUT</b> Xx1 - <b>DIGITAL IN</b> Xx2 - <b>DIGITAL OUT</b>
Extended IO Function	<b>Xz</b>	Xz0 - <b>TRIGGER PULSE</b> Xz1 - <b>ALARM PULSE</b>
Extended IO Active Level	<b>Xc</b>	Xc0 - <b>LOW</b> Xc1 - <b>HIGH</b>
Extended IO Source	<b>Xs</b>	Xs3 - <b>PEAK(1)</b> Xs4 - <b>SPL(1)</b> Xs5 - <b>LEQ(1)</b>
Extended IO Alarm Level	<b>Xn</b>	Xnxxxx - xxxx alarm level in dB multiple by 10 ∈ (300 ÷ 1400)
Reference Level ACC	<b>Xa</b>	Xannn - nnn reference level ∈ (1 ÷ 100) in μm/s <sup>2</sup>
Reference Level VEL	<b>Xv</b>	Xvnnn - nnn reference level ∈ (1 ÷ 100) in nm/s
Reference Level DIL	<b>Xd</b>	Xdnnn - nnn reference level ∈ (1 ÷ 100) in pm
Auto Save	<b>XA</b>	XA0 - switched off ([ ]) XA1 - switched on ([√])
RAM File	<b>XR</b>	XR0 - switched off ([ ]) XR1 - switched on ([√])
Save Statistics	<b>XS</b>	XS0 - switched off ([ ]) XS1 - switched on ([√])
Save Max Spectrum	<b>XM</b>	XM0 - switched off ([ ]) XM1 - switched on ([√])
Save Min Spectrum	<b>Xm</b>	Xm0 - switched off ([ ]) Xm1 - switched on ([√])
Replace File	<b>XP</b>	XP0 - switched off ([ ]) XP1 - switched on ([√])
Direct Save	<b>XD</b>	XD0 - switched off ([ ]) XD1 - switched on ([√])
<b>RPM On</b>	<b>Xr</b>	Xr0 - <b>switched off ([ ])</b> Xr1 - <b>switched on ([√])</b>
<b>RPM Pulse</b>	<b>Xp</b>	Xpnnn - nnn pulse/rot ∈ (1 ÷ 360)
<b>RPM Unit</b>	<b>Xu</b>	Xu0 - <b>RPS</b> Xu1 - <b>RPM</b>
Logger Triggering mode (TriggerMode)	<b>XT</b>	XT0 - switched off ( <b>OFF</b> ) XT1 - <b>LEVEL +</b> XT2 - <b>LEVEL –</b>
Logger Triggering level (TriggerLev) in <b>SLM</b> mode	<b>XL</b>	XLnnn - nnn level in dB ∈ (24 ÷ 136)
Logger Triggering Number of records taken into account before the fulfilment of the triggering condition (TriggerPre)	<b>XQ</b>	XQnn - nn number of records saved in the logger before the triggering condition; nn ∈ (0 ÷ 50)

Logger Triggering Number of records taken into account after the fulfilment of the triggering condition (TriggerPost)	<b>Xq</b>	Xqnnn - nnn number of records saved in the logger after the fulfilment of the triggering condition; $nn \in (0 \div 200)$
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## B. DATA FILE STRUCTURES

### B.1. Structure of the G7 file

Each file containing data from the **G7** instrument consists of several groups of words. In the case of the **G7** (the internal file system version **6.04**) there are different types of files that contain:

- the results stored in the file in the instrument's logger (cf. App. B.2)
- the measurement results from the **Sound Level Meter** mode (cf. App. B.3)
- the measurement results from the **Vibration Level Meter** mode (cf. App. B.4)
- the results of the **DOSE METER** function (cf. App. B.5)
- the results from **1/1 OCTAVE** analysis (cf. App. B.6)
- the results from **1/3 OCTAVE** analysis (cf. App. B.7)
- the results from the **FFT** analysis (cf. App. B.8)
- the results of the **RT60** function (cf. App. B.9)
- the setup data (cf. App. B.10)

Each file has the following elements:

- a file header (cf. Tab. B.1.1);
- the unit and internal software specification (cf. Tab. B.1.2)
- the user's text (a header) stored together with the measurement data (cf. Tab. B.1.3)
- the parameters and global settings, common for all profiles (cf. Tab. B.1.4\_SLM and Tab. B.1.4\_VLM)
- the parameters for measurement trigger (cf. Tab. B.1.5)
- the parameters for logger trigger (cf. Tab. B.1.6)
- the parameters for recorder trigger (cf. Tab. B.1.7)
- the Extended I/O settings (cf. Tab. B.1.8)
- the special settings for profiles (cf. Tab. B.1.9\_SLM and Tab. B.1.9\_VLM)
- the marker for the end of the file (cf. Tab. B.1.27)

The other elements of the file structure are not obligatory for each file type stated above. They depend on the file type (**VLM** or **SLM**, **1/1 OCTAVE**, **1/3 OCTAVE**, **FFT**, **RT60**, file from the logger). These elements are as follows:

- the main results (cf. Tab. B.1.10\_SLM, Tab. B.1.10\_DM and Tab. B.1.10\_VLM)
- the results coming from **1/1 OCTAVE** analysis (cf. Tab. B.1.11)
- the results coming from **1/3 OCTAVE** analysis (cf. Tab. B.1.12)
- the header of the **FFT** analysis (cf. Tab. B.1.13)
- the results of the **FFT** analysis (cf. Tab. B.1.14)
- statistical levels (cf. Tab. B.1.15)
- the header of the statistical analysis (cf. Tab. B.1.16)
- the results of the statistical analysis (cf. Tab. B.1.17)
- the header of the statistical analysis performed in **1/1 OCTAVE** or **1/3 OCTAVE** analysis (cf. Tab. B.1.18)
- the results of the statistical analysis made in **1/1 OCTAVE** or **1/3 OCTAVE** analysis (cf. Tab. B.1.19)
- the parameters of the **RT60** function (cf. Tab. B.1.20)
- the results from the **RT60** function (cf. Tab. B.1.21)
- the averaged results from the **RT60** function (cf. Tab. B.1.22)
- the **RPM** results (cf. Tab. B.1.23)
- the settings of the instrument saved in the setup file (cf. Tab. B.1.24)

- the logger header (cf. Tab. B.1.25)
- the data stored during the measurements in the logger (cf. Tab. B.1.26)

Below, all file structure groups are described separately in Tab. B.1.1 ÷ Tab. B.1.27. The format used in the columns, named **Comment** with the square parenthesis ( [xx, yy] ), means the contents of the word with **xx** is the most significant byte (MSB) and **yy** the lowest significant byte (LSB) of the word. The format 0xnnnn means that the nnnn is four-digit number in hexadecimal form.

**Table B.1.1. File header**

Word number	Name	Comment
0	0xnn01	[01 = id, nn = block's length]
1..4	FileName	file or logger name (8 characters)
5	Reserved	reserved
6	CurrentDate	file creation date
7	CurrentTime	file creation time
8..11	AssBufFileName	name of the associated logger or file (8 bytes)
...	...	...

**Table B.1.2. Unit and software specification**

Word number	Name	Comment
0	0xnn02	[02 = id, nn = block's length]
1	UnitNumber	unit number
2	UnitType	unit type: 957
3	SoftwareVersion	software version * 100
4	SoftwareIssueDate	software issue date
5	DeviceMode	device mode: 0 - <b>Vibration Level Meter</b> / Analyser (VLM) 1 - <b>Sound Level Meter</b> / Analyser (SLM)
6	UnitSubtype	unit subtype: 1
7	FileSysVersion	file system version
8	LevelMetVersion	level meter version
9	SoftwareSubversion	software subversion
...	...	...

**Table B.1.3. USER's text**

Word number	Name	Comment
0	0xnn03	[03 = id, nn = block's length]
1...	title text	the user's text (two characters in a word) finished with one or two null bytes

Table B.1.4\_SLM. Parameters and global settings in the case of SLM mode

Word number	Name	Comment
0	0xnn04	[04 = id, nn = block's length]
1	MeasureStartDate	measure start date
2	MeasureStartTime	measure start time
3	DeviceFunction	device function: 1 - <b>LEVEL METER</b> 2 - <b>1/1 OCTAVE</b> analyser 3 - <b>1/3 OCTAVE</b> analyser 4 - <b>DOSE METER</b> 6 - <b>FFT</b> analyser 8 - <b>RT60</b> function
4	MeasureInput	measurement input type: 2 - <b>Microphone</b>
5	Range	measurement range: 1 - <b>LOW</b> 2 - <b>HIGH</b>
6	UnitFlags	calibration flags
7	RepCycle	repetition cycle: 0 - infinity nnnn - number of repetitions $\in (1 \div 1000)$
8	NofProf	number of profiles (3)
9	StartDelay	start delay time specified in seconds: 0..60
10..11	IntTimeSec	integration time specified in seconds
12	MicFieldCorr	field correction: 0 - <b>FREE</b> 1 - <b>DIFFUSE</b>
13	LeqInt	detector's type in the <b>LEQ</b> function: 0 - <b>LINEAR</b> 1 - <b>EXPONENTIAL</b>
14	SpectrumFilter	<b>1/1, 1/3 OCTAVE</b> or <b>FFT</b> analysis filter: 0 - <b>Z</b> , 2 - <b>A</b> , 3 - <b>C</b>
15	SpectrumBuff	<b>1/1, 1/3 OCTAVE</b> or <b>FFT</b> logger: 0 - off, 1 - on in other cases: reserved
16	ExposureTime	exposure time: 1..480 (min)
17	CriterionLevel or RT60Method	criterion level in case of <b>DOSE METER</b> : 80, 84, 85, 90 (*10 dB) RT60 method in case of <b>RT60</b> function: 1 - <b>DECAY</b> , 2 - <b>IMPULSE</b> in other cases: reserved
18	ThresholdLevel	threshold level (only <b>DOSE METER</b> ): 0, 75, 80, 85, 90 (*10 dB)
19	ExchangeRate	exchange rate (only <b>DOSE METER</b> ): 2, 3, 4, 5
20	CalibrType	last calibration type: 0 - none, 1 - by measurement, 2 - by sensitivity

21	CalibrDate	last calibration date
22	CalibrTime	last calibration time
23		reserved
24		reserved
25	OutdoorFilter	outdoor filter: 0 - off, 1 - on
26	OutdoorType	outdoor filter type: 0 - <b>ENVIRONMENT</b> , 1 - <b>AIRPORT</b>
27	MicComp	compensating filter for microphones: 0 - off, 1 - on
28	VoltageInput	voltage input: 0 - off, 1 - on
29	HighCurrentIEPE	0 - 1.5 mA 1 - 4.5 mA
30..47		reserved
...	...	...

Table B.1.4\_VLM. Parameters and global settings in the case of VLM mode

Word number	Name	Comment
0	0xnn04	[04 = id, nn = block's length]
1	MeasureStartDate	measure start date
2	MeasureStartTime	measure start time
3	DeviceFunction	device function: 1 - <b>LEVEL METER</b> 2 - <b>1/1 OCTAVE</b> analyser 3 - <b>1/3 OCTAVE</b> analyser 6 - <b>FFT</b> analyser
4	MeasureInput	measurement input type: 5 - <b>Accelerometer</b>
5	Range	measurement range: 1 - <b>LOW</b> 2 - <b>HIGH</b>
6	UnitFlags	calibration flags
7	RepCycle	repetition cycle: 0 - infinity nnnn - number of repetitions $\in (1 \div 1000)$
8	NofProf	number of profiles (3)
9	StartDelay	start delay time specified in seconds: 0..60
10..11	IntTimeSec	integration time specified in seconds
12	Reserved	reserved
13	LeqInt	detector type in the <b>RMS</b> function: 0 - <b>LINEAR</b> , 1 - <b>EXPONENTIAL</b>
14	SpectrumFilter	<b>1/1, 1/3 OCTAVE</b> or <b>FFT</b> analysis filter: 0 - <b>Z</b>
15	SpectrumBuff	<b>1/1, 1/3 OCTAVE</b> or <b>FFT</b> logger: 0 - off, 1 - on in other cases:

		reserved
16		reserved
17	RefLev_a	reference level for acceleration given in $\mu\text{ms}^{-2} \in (1 \div 100)$
18	RefLev_v	reference level for velocity given in $\text{nms}^{-1} \in (1 \div 100)$
19	RefLev_d	reference level for displacement given in $\text{pm} \in (1 \div 100)$
20	CalibrType	last calibration type: 0 - none, 1 - by measurement, 2 - by sensitivity
21	CalibrDate	last calibration date
22	CalibrTime	last calibration time
23	RPM_On	RPM measure 0 - off, 1 - on
24	RPM_Pulse	RPM pulse: 1..360
25		reserved
26		reserved
27		reserved
28	VoltageInput	voltage input: 0 - off, 1 - on
29	HighCurrentIEPE	0 - 1.5 mA 1 - 4.5 mA
30..47		reserved
...	...	...

Table B.1.5. MEASURE TRIGGER parameters

Word number	Name	Comment
0	0xnn2B	[2B = id, nn = block's length]
1	TriggerMode	trigger mode: 0 - <b>OFF</b> 1 - <b>SLOPE +</b> 2 - <b>SLOPE -</b> 3 - <b>LEVEL +</b> 4 - <b>LEVEL -</b> 6 - <b>GRAD +</b>
2	TriggerSource	source of the triggering signal: 0 - <b>RMS(1)</b> the <b>RMS</b> result from the first profile in the case of TriggerMode= <b>SLOPE +</b> or <b>SLOPE -</b> : 1 - <b>External IO</b>
3	TriggerLev	level of triggering: 24..136 dB (*10)
4	TriggerGrad	gradient of triggering (in case of TriggerMode= <b>GRAD +</b> ): 1dB/ms..100dB/ms
5	TriggerPre	reserved
6	TriggerPost	reserved
...	...	...

Table B.1.6. LOGGER TRIGGER parameters

Word number	Name	Comment
0	0xnn2C	[2C = id, nn = block's length]
1	TriggerMode	trigger mode: 0 - <b>OFF</b> 3 - <b>LEVEL +</b> 4 - <b>LEVEL –</b> in the case of <b>RT60</b> function and <b>DECAY</b> method 5 - <b>DECAY</b> in the case of <b>RT60</b> function and <b>IMPULSE</b> method 1 - <b>SLOPE+</b>
2	TriggerSource	source of the triggering signal: 0 - <b>RMS(1)</b> the <b>RMS</b> result from the first profile in the case of <b>1/1 OCTAVE</b> analyser nn - number of <b>1/1 OCTAVE</b> filter $\in (8 \div \text{NOct})$ in the case of <b>1/3 OCTAVE</b> analyser nn - number of <b>1/3 OCTAVE</b> filter $\in (23 \div \text{Nter})$ in the case of <b>RT60</b> function 48 - <b>TOTAL Z</b> ( $\text{Nter} + \text{NTotal}$ )
3	TriggerLev	level of triggering: 24..136 dB (*10)
4	TriggerGrad	in the case of <b>RT60</b> function and <b>DECAY</b> method decay of triggering: -10dB (*10) in other cases: reserved
5	TriggerPre	number of the records taken into account before the fulfilment of the triggering condition $\in (1 \div 50)$
6	TriggerPost	number of the records taken into account after the fulfilment of the triggering condition $\in (1 \div 200)$
...	...	...

Table B.1.7. RECORDER TRIGGER parameters

Word number	Name	Comment
0	0xnn2D	[2D = id, nn = block's length]
1	TriggerMode	trigger mode: 0 - <b>OFF</b> 1 - <b>SLOPE +</b> 2 - <b>SLOPE –</b> 3 - <b>LEVEL +</b> 4 - <b>LEVEL –</b> 6 - <b>GRAD +</b>
2	TriggerSource	source of the triggering signal: 0 - <b>RMS(1)</b> the <b>RMS</b> result from the first profile in the case of TriggerMode= <b>SLOPE +</b> or <b>SLOPE –</b> : 1 - <b>External I/O</b>
3	TriggerLev	level of triggering: 24..136 dB (*10)
4	TriggerGrad	gradient of triggering (in case of TriggerMode= <b>GRAD +</b> ):

		1dB/ms..100dB/ms
5	TriggerPre	reserved
6	TriggerPost	reserved
...	...	...

Table B.1.8. EXTENDED I/O parameters

Word number	Name	Comment
0	0xnn2E	[2E = id, nn = block's length]
1	Mode	mode: 0 - <b>ANALOG OUT</b> 1 - <b>DIGITAL IN</b> 2 - <b>DIGITAL OUT</b>
2	Function	in case of <b>ANALOG OUT</b> : reserved in case of <b>DIGITAL IN</b> : 0 - <b>EXTERNAL TRIGGER</b> in case of <b>DIGITAL OUT</b> : 0 - <b>TRIG. PULSE</b> 1 - <b>ALARM PULSE</b>
3	ActiveLevel	in case of <b>DIGITAL OUT</b> and <b>ALARM PULSE</b> : 0 - <b>LOW</b> 1 - <b>HIGH</b> in other cases: reserved
4	Source	in case of <b>DIGITAL OUT</b> and <b>ALARM PULSE</b> : 0 - <b>PEAK(1)</b> 1 - <b>SPL(1)</b> 2 - <b>LEQ(1)</b> in other cases reserved
5	AlarmLevel	in case of <b>DIGITAL OUT</b> and <b>ALARM PULSE</b> : 30 - 140 dB (*10) in other cases reserved
6	AO_Direct	in case of <b>ANALOG OUT</b> 0 - off, 1 - on in other cases reserved
7	AO_DA	in case of <b>ANALOG OUT</b> 0 - off, 1 - on in other cases reserved
8	AO_Source	in case of <b>ANALOG OUT</b> and <b>AO_DA</b> : 0 - <b>A</b> 1 - <b>C</b> 2 - <b>Z</b> in other cases reserved
9	Polarisation	in case of <b>DIGITAL OUT</b> and <b>TRIG. PULSE</b> : 0 - <b>POSITIVE</b> 1 - <b>NEGATIVE</b> in other cases: reserved
...	...	...

Table B.1.9\_SLM. Special settings for profiles in the case of SLM mode

Word number	Name	Comment
0	0xnn05	[05 = id, nn = block's length]
1	0x0307	[used_profile, profile's mask]
2	0xmm06	[06 = id, mm = sub-block's length]
3	DetectorP[1]	detector type in the 1 <sup>st</sup> profile: 0 - <b>IMP.</b> 1 - <b>FAST</b> 2 - <b>SLOW</b>
4	FilterP[1]	filter type in the 1 <sup>st</sup> profile: 0 - <b>Z</b> 2 - <b>A</b> 3 - <b>C</b>
5	BufferP[1]	logger contents in the 1 <sup>st</sup> profile defined as a sum of: 0 - none 1 - <b>PEAK</b> 2 - <b>MAX</b> 4 - <b>MIN</b> 8 - <b>RMS</b>
6	CalibrFactor[1]	calibration factor (*10 dB) in the 1 <sup>st</sup> profile
7	ProfileFlags[1]	flags in the 1 <sup>st</sup> profile
8	0xmm06	[06 = id, mm = sub-block's length]
9	DetectorP[2]	detector type in the 2 <sup>nd</sup> profile: 0 - <b>IMP.</b> 1 - <b>FAST</b> 2 - <b>SLOW</b>
10	FilterP[2]	filter type in the 2 <sup>nd</sup> profile: 0 - <b>Z</b> 2 - <b>A</b> 3 - <b>C</b>
11	BufferP[2]	logger contents in the 2 <sup>nd</sup> profile defined as a sum of: 0 - none 1 - <b>PEAK</b> 2 - <b>MAX</b> 4 - <b>MIN</b> 8 - <b>RMS</b>
12	CalibrFactor[2]	calibration factor (*10 dB) in the 2 <sup>nd</sup> profile
13	ProfileFlags[2]	flags in the 2 <sup>nd</sup> profile
14	0xmm06	[06 = id, mm = sub-block's length]
15	DetectorP[3]	Detector type in the 3 <sup>rd</sup> profile: 0 - <b>IMP.</b> 1 - <b>FAST</b> 2 - <b>SLOW</b>
16	FilterP[3]	filter type in the 3 <sup>rd</sup> profile: 0 - <b>Z</b> 2 - <b>A</b>



		<b>3 - C</b>
17	BufferP[3]	logger contents in the 3 <sup>rd</sup> profile defined as a sum of: 0 - none 1 - <b>PEAK</b> 2 - <b>MAX</b> 4 - <b>MIN</b> 8 - <b>RMS</b>
18	CalibrFactor[3]	calibration factor (*10 dB) in the 3 <sup>rd</sup> profile
19	ProfileFlags[3]	flags in the 3 <sup>rd</sup> profile
...	...	...

Table B.1.9\_VLM. Special settings for profiles in the case of VLM mode

Word number	Name	Comment
0	0xnn05	[05 = id, nn = block's length]
1	0x0307	[used_profile, profile's mask]
2	0xmm06	[06 = id, mm = sub-block's length]
3	DetectorP[1]	detector type in the 1 <sup>st</sup> profile: 0 - <b>100 ms</b> 1 - <b>125 ms</b> 2 - <b>200 ms</b> 3 - <b>500 ms</b> 4 - <b>1 s</b> 5 - <b>2 s</b> 6 - <b>5 s</b> 7 - <b>10 s</b>
4	FilterP[1]	filter type in the 1 <sup>st</sup> profile: 0 - <b>Z</b> 1 - <b>HP1</b> 2 - <b>HP3</b> 3 - <b>HP10</b> 4 - <b>Vel1</b> 5 - <b>Vel3</b> 6 - <b>Vel10</b> 7 - <b>VelMF</b> 8 - <b>Dil1</b> 9 - <b>Dil3</b> 10 - <b>Dil10</b> 15 - <b>KB</b> 16 - <b>Wk</b> 17 - <b>Wd</b> 18 - <b>Wc</b> 19 - <b>Wj</b> 20 - <b>Wm</b> 21 - <b>Wh</b> 22 - <b>Wg</b> 23 - <b>Wb</b>
5	BufferP[1]	logger contents in the 1 <sup>st</sup> profile defined as a sum of: 0 - none 1 - <b>PEAK</b> 2 - <b>P-P</b>

		<b>4 - MAX</b> <b>8 - RMS</b>
6	CalibrFactor[1]	calibration factor (*10 dB) in the 1 <sup>st</sup> profile
7	ProfileFlags[1]	flags in the 1 <sup>st</sup> profile
8	0xmm06	[06 = id, mm = sub-block's length]
9	DetectorP[2]	detector type in the 2 <sup>nd</sup> profile: <b>0 - 100 ms</b> <b>1 - 125 ms</b> <b>2 - 200 ms</b> <b>3 - 500 ms</b> <b>4 - 1 s</b> <b>5 - 2 s</b> <b>6 - 5 s</b> <b>7 - 10 s</b>
10	FilterP[2]	filter type in the 2 <sup>nd</sup> profile: <b>0 - Z</b> <b>1 - HP1</b> <b>2 - HP3</b> <b>3 - HP10</b> <b>4 - Vel1</b> <b>5 - Vel3</b> <b>6 - Vel10</b> <b>7 - VelMF</b> <b>8 - Di1</b> <b>9 - Di3</b> <b>10 - Di10</b> <b>15 - KB</b> <b>16 - Wk</b> <b>17 - Wd</b> <b>18 - Wc</b> <b>19 - Wj</b> <b>20 - Wm</b> <b>21 - Wh</b> <b>22 - Wg</b> <b>23 - Wb</b>
11	BufferP[2]	logger contents in the 2 <sup>nd</sup> profile defined as a sum of: <b>0 - none</b> <b>1 - PEAK</b> <b>2 - P-P</b> <b>4 - MAX</b> <b>8 - RMS</b>
12	CalibrFactor[2]	calibration factor (*10 dB) in the 2 <sup>nd</sup> profile
13	ProfileFlags[2]	flags in the 2 <sup>nd</sup> profile
14	0xmm06	[06 = id, mm = sub-block's length]
15	DetectorP[3]	detector type in the 3 <sup>rd</sup> profile: <b>0 - 100 ms</b> <b>1 - 125 ms</b> <b>2 - 200 ms</b> <b>3 - 500 ms</b> <b>4 - 1 s</b>

		5 - <b>2 s</b> 6 - <b>5 s</b> 7 - <b>10 s</b>
16	FilterP[3]	filter type in the 3 <sup>rd</sup> profile: 0 - <b>Z</b> 1 - <b>HP1</b> 2 - <b>HP3</b> 3 - <b>HP10</b> 4 - <b>Vel1</b> 5 - <b>Vel3</b> 6 - <b>Vel10</b> 7 - <b>VelMF</b> 8 - <b>Dil1</b> 9 - <b>Dil3</b> 10 - <b>Dil10</b> 15 - <b>KB</b> 16 - <b>Wk</b> 17 - <b>Wd</b> 18 - <b>Wc</b> 19 - <b>Wj</b> 20 - <b>Wm</b> 21 - <b>Wh</b> 22 - <b>Wg</b> 23 - <b>Wb</b>
17	BufferP[3]	logger contents in the 3 <sup>rd</sup> profile defined as a sum of: 0 - none 1 - <b>PEAK</b> 2 - <b>P-P</b> 4 - <b>MAX</b> 8 - <b>RMS</b>
18	CalibrFactor[3]	calibration factor (*10 dB) in the 3 <sup>rd</sup> profile
19	ProfileFlags[3]	flags in the 3 <sup>rd</sup> profile
...	...	...

Table B.1.10\_SLM. Main results in the case of SLM mode

Word number	Name	Comment
0	0xnn07	[07 = id, nn = block's length]
1	0x0307	[used_profile, profile's mask]
2	0xmm08	[08 = id, mm = sub-block's length]
3..4	MeasureTime	time of the measurement
5	Result[1][1]	<b>PEAK</b> value in the 1 <sup>st</sup> profile
6	Result[1][2]	reserved
7	Result[1][3]	maximal value ( <b>MAX</b> ) in the 1 <sup>st</sup> profile
8	Result[1][4]	minimal value ( <b>MIN</b> ) in the 1 <sup>st</sup> profile
9	Result[1][5]	<b>SPL</b> value in the 1 <sup>st</sup> profile
10	Result[1][6]	<b>LEQ</b> value in the 1 <sup>st</sup> profile
11	Result[1][7]	<b>Lden</b> value in the 1 <sup>st</sup> profile

12	Result[1][8]	<b>Ltm3</b> value in the 1 <sup>st</sup> profile
13	Result[1][9]	<b>Ltm5</b> value in the 1 <sup>st</sup> profile
14	Result[1][10]	reserved
15	Result[1][11]	reserved
16	UnderRes[1]	underrange value in the 1 <sup>st</sup> profile
17	0xmm08	[08 = id, mm = sub-block's length]
18..19	OVL	overload time
20	Result[2][1]	<b>PEAK</b> value in the 2 <sup>nd</sup> profile
21	Result[2][2]	reserved
22	Result[2][3]	maximal value ( <b>MAX</b> ) in the 2 <sup>nd</sup> profile
23	Result[2][4]	minimal value ( <b>MIN</b> ) in the 2 <sup>nd</sup> profile
24	Result[2][5]	<b>SPL</b> value in the 2 <sup>nd</sup> profile
25	Result[2][6]	<b>LEQ</b> value in the 2 <sup>nd</sup> profile
26	Result[2][7]	<b>Lden</b> value in the 2 <sup>nd</sup> profile
27	Result[2][8]	<b>Ltm3</b> value in the 2 <sup>nd</sup> profile
28	Result[2][9]	<b>Ltm5</b> value in the 2 <sup>nd</sup> profile
29	Result[2][10]	reserved
30	Result[2][11]	reserved
31	UnderRes[2]	underrange value in the 2 <sup>nd</sup> profile
32	0xmm08	[08 = id, mm = sub-block's length]
33..34	Reserved	reserved
35	Result[3][1]	<b>PEAK</b> value in the 3 <sup>rd</sup> profile
36	Result[3][2]	reserved
37	Result[3][3]	maximal value ( <b>MAX</b> ) in the 3 <sup>rd</sup> profile
38	Result[3][4]	minimal value ( <b>MIN</b> ) in the 3 <sup>rd</sup> profile
39	Result[3][5]	<b>SPL</b> value in the 3 <sup>rd</sup> profile
40	Result[3][6]	<b>LEQ</b> value in the 3 <sup>rd</sup> profile
41	Result[3][7]	<b>Lden</b> value in the 3 <sup>rd</sup> profile
42	Result[3][8]	<b>Ltm3</b> value in the 3 <sup>rd</sup> profile
43	Result[3][9]	<b>Ltm5</b> value in the 3 <sup>rd</sup> profile
44	Result[3][10]	reserved
45	Result[3][11]	reserved
46	UnderRes[3]	underrange value in the 3 <sup>rd</sup> profile
...	...	...

Table B.1.10\_DM. Main results in DOSE METER mode

Word number	Name	Comment
0	0xnn07	[07 = id, nn = block's length]
1	0x0307	[used_profile, profile's mask]

2	0xmm08	[08 = id, mm = sub-block's length]
3..4	MeasureTime	time of the measurement
5	Result[1][1]	<b>PEAK</b> value in the 1 <sup>st</sup> profile
6	Result[1][2]	reserved
7	Result[1][3]	maximal value ( <b>MAX</b> ) in the 1 <sup>st</sup> profile
8	Result[1][4]	minimal value ( <b>MIN</b> ) in the 1 <sup>st</sup> profile
9	Result[1][5]	<b>SPL</b> value in the 1 <sup>st</sup> profile
10	Result[1][6]	<b>LEQ</b> value in the 1 <sup>st</sup> profile
11	Result[1][7]	<b>Lden</b> value in the 1 <sup>st</sup> profile
12	Result[1][8]	<b>Ltm3</b> value in the 1 <sup>st</sup> profile
13	Result[1][9]	<b>Ltm5</b> value in the 1 <sup>st</sup> profile
14	Result[1][10]	<b>LAV</b> value in the 1 <sup>st</sup> profile
15	Result[1][11]	<b>TLAV</b> value in the 1 <sup>st</sup> profile
16	UnderRes[1]	underrange value in the 1 <sup>st</sup> profile
17	0xmm08	[08 = id, mm = sub-block's length]
18..19	OVL	overload time
20	Result[2][1]	<b>PEAK</b> value in the 2 <sup>nd</sup> profile
21	Result[2][2]	reserved
22	Result[2][3]	maximal value ( <b>MAX</b> ) in the 2 <sup>nd</sup> profile
23	Result[2][4]	minimal value ( <b>MIN</b> ) in the 2 <sup>nd</sup> profile
24	Result[2][5]	<b>SPL</b> value in the 2 <sup>nd</sup> profile
25	Result[2][6]	<b>LEQ</b> value in the 2 <sup>nd</sup> profile
26	Result[2][7]	<b>Lden</b> value in the 2 <sup>nd</sup> profile
27	Result[2][8]	<b>Ltm3</b> value in the 2 <sup>nd</sup> profile
28	Result[2][9]	<b>Ltm5</b> value in the 2 <sup>nd</sup> profile
29	Result[2][10]	<b>LAV</b> value in the 2 <sup>nd</sup> profile
30	Result[2][11]	<b>TLAV</b> value in the 2 <sup>nd</sup> profile
31	UnderRes[2]	underrange value in the 2 <sup>nd</sup> profile
32	0xmm08	[08 = id, mm = sub-block's length]
33..34	Reserved	reserved
35	Result[3][1]	<b>PEAK</b> value in the 3 <sup>rd</sup> profile
36	Result[3][2]	reserved
37	Result[3][3]	maximal value ( <b>MAX</b> ) in the 3 <sup>rd</sup> profile
38	Result[3][4]	minimal value ( <b>MIN</b> ) in the 3 <sup>rd</sup> profile
39	Result[3][5]	<b>SPL</b> value in the 3 <sup>rd</sup> profile
40	Result[3][6]	<b>LEQ</b> value in the 3 <sup>rd</sup> profile
41	Result[3][7]	<b>Lden</b> value in the 3 <sup>rd</sup> profile
42	Result[3][8]	<b>Ltm3</b> value in the 3 <sup>rd</sup> profile
43	Result[3][9]	<b>Ltm5</b> value in the 3 <sup>rd</sup> profile
44	Result[3][10]	<b>LAV</b> value in the 3 <sup>rd</sup> profile
45	Result[3][11]	<b>TLAV</b> value in the 3 <sup>rd</sup> profile
46	UnderRes[3]	underrange value in the 3 <sup>rd</sup> profile
...	...	...

Table B.1.10\_VLM. Main results in the case of VLM mode

Word number	Name	Comment
0	0xnn07	[07 = id, nn = block's length]
1	0x0307	[used_profile, profile's mask]
2	0xmm08	[08 = id, mm = sub-block's length]
3..4	MeasureTime	time of the measurement
5	Result[1][1]	<b>PEAK</b> value in the 1 <sup>st</sup> profile
6	Result[1][2]	<b>P-P</b> value in the 1 <sup>st</sup> profile
7	Result[1][3]	maximal value ( <b>MAX</b> ) in the 1 <sup>st</sup> profile
8	Result[1][4]	minimal value ( <b>MIN</b> ) in the 1 <sup>st</sup> profile
9	Result[1][5]	<b>SPL</b> value in the 1 <sup>st</sup> profile
10	Result[1][6]	<b>RMS</b> value in the 1 <sup>st</sup> profile
11	Result[1][7]	<b>VDV</b> value in the 1 <sup>st</sup> profile
12	Result[1][8]	reserved
13	Result[1][9]	reserved
14	Result[1][10]	reserved
15	Result[1][11]	reserved
16	UnderRes[1]	underrange value in the 1 <sup>st</sup> profile
17	0xmm08	[08 = id, mm = sub-block's length]
18..19	OVL	overload time
20	Result[2][1]	<b>PEAK</b> value in the 2 <sup>nd</sup> profile
21	Result[2][2]	<b>P-P</b> value in the 2 <sup>nd</sup> profile
22	Result[2][3]	maximal value ( <b>MAX</b> ) in the 2 <sup>nd</sup> profile
23	Result[2][4]	minimal value ( <b>MIN</b> ) in the 2 <sup>nd</sup> profile
24	Result[2][5]	<b>SPL</b> value in the 2 <sup>nd</sup> profile
25	Result[2][6]	<b>RMS</b> value in the 2 <sup>nd</sup> profile
26	Result[2][7]	<b>VDV</b> value in the 2 <sup>nd</sup> profile
27	Result[2][8]	reserved
28	Result[2][9]	reserved
29	Result[2][10]	reserved
30	Result[2][11]	reserved
31	UnderRes[2]	underrange value in the 2 <sup>nd</sup> profile
32	0xmm08	[08 = id, mm = sub-block's length]
33..34	Reserved	reserved
35	Result[3][1]	<b>PEAK</b> value in the 3 <sup>rd</sup> profile
36	Result[3][2]	<b>P-P</b> value in the 3 <sup>rd</sup> profile
37	Result[3][3]	maximal value ( <b>MAX</b> ) in the 3 <sup>rd</sup> profile
38	Result[3][4]	minimal value ( <b>MIN</b> ) in the 3 <sup>rd</sup> profile
39	Result[3][5]	<b>SPL</b> value in the 3 <sup>rd</sup> profile
40	Result[3][6]	<b>RMS</b> value in the 3 <sup>rd</sup> profile
41	Result[3][7]	<b>VDV</b> value in the 3 <sup>rd</sup> profile
42	Result[3][8]	reserved

43	Result[3][9]	reserved
44	Result[3][10]	reserved
45	Result[3][11]	reserved
46	UnderRes[3]	underrange value in the 3 <sup>rd</sup> profile
...	...	...

Table B.1.11. 1/1 OCTAVE analysis results

Word number	Name	Comment
0	0xnn0E, 0xnn26, 0xnn27	[block_id, nn=block_length] 0xnn <b>0E</b> - averaged spectrum results, 0xnn <b>26</b> - min. spectrum results, 0xnn <b>27</b> - max. spectrum results
1	0x0101	[used_profile, profile's mask]
2	LowestFreq	the lowest <b>1/1 OCTAVE</b> frequency (*100 Hz): 100 (FULL BAND) or 3150 (AUDIO BAND)
3	NOct	number of <b>1/1 OCTAVE</b> values: 15 (FULL BAND) or 10 (AUDIO BAND)
4	NOctTot	number of <b>TOTAL</b> values: 3
5...20	Octave[i]	1/1 octave[i] value (*10 dB); i=1..NOct+NoctTot (1..16)
...	...	...

Table B.1.12. 1/3 OCTAVE analysis results

Word number	Name	Comment
0	0xnn10, 0xnn28, 0xnn29	[block_id, nn=block_length] 0xnn <b>10</b> - averaged spectrum results, 0xnn <b>28</b> - min. spectrum results, 0xnn <b>29</b> - max. spectrum results
1	0x0101	[used_profile, profile's mask]
2	LowestFreq	the lowest <b>1/3 OCTAVE</b> frequency (*100 Hz): 80 (FULL BAND) or 2000 (AUDIO BAND)
3	NTer	number of <b>1/3 OCTAVE</b> values: 45 (FULL BAND) or 31 (AUDIO BAND)
4	NTerTot	number of <b>TOTAL</b> values: 3
5...50	Tercje[i]	1/3 octave[i] value (*10 dB); i=1..NTer+NTerTot (1..46)
...	...	...

Table B.1.13. Header of the FFT analysis

Word	Name	Comment
------	------	---------

number		
0	0xnn11	[11 = id, nn = block's length]
1	reserved	reserved
2	LowestFreqNo	number of the first line in the <b>FFT</b> spectrum
3	NFft	number of lines in the spectrum = 1920
4	NFftTot	number of TOTAL lines in the spectrum = 1
5	FftBand	band of the FFT analysis: 1 - <b>22.4 kHz</b> 2 - <b>11.2 kHz</b> 3 - <b>5.6 kHz</b> 4 - <b>2.8 kHz</b> 5 - <b>1.4 kHz</b> 6 - <b>700 Hz</b> 7 - <b>350 Hz</b> 8 - <b>175 Hz</b> 9 - <b>87.5 Hz</b>
6	FftWindow	window in the <b>FFT</b> analysis: 0 - <b>HANNING</b> 1 - <b>RECTANGLE</b> 2 - <b>FLAT TOP</b> 3 - <b>KAISER-BESSEL</b>
7	FftAverag	type of averaging in the <b>FFT</b> analysis: 0 - <b>LINEAR</b>
8..9	FftSampFreq	sampling frequency
10	FFT_wfactor	
11	reserved	
...	...	...

Table B.1.14. FFT analysis results

Word number	Name	Comment
0	0x0012	[12 = id, 0 (block is longer than 256 words, the length is given in the second word)]
1	FftBlockLength	2 + NFft + NFftTot = 2 + 1920 + 1 = 1923
2..1922	FFT[i]	value of the FFT line (*10 dB); i = 1..1921

Table B.1.15. Statistical levels

Word number	Name	Comment
0	0xnn17	[17 = id, nn = block's length]
1	0xpprr	[pp=used_profile, rr=profile's mask]
2	N_stat_level	number of statistical levels = N
3+i*(pp+1)	nn[i]	number of the <b>Lnn</b> statistics; i=0..N-1
3+i*(pp+1)+p	<b>Lnn</b> [i,p]	value of the <b>Lnn</b> statistics for profile p (p=1..pp)
...	...	...



Table B.1.16. Header of the statistical analysis in profiles

Word number	Name	Comment
0	0xnn09	[09 = id, nn = block's length]
1	0x0703	[03=number of profiles, 07=active profiles mask]
2	0xmm0A	[0A = id, mm = sub-block's length]
3	NofClasses[1]	number of classes in the 1 <sup>st</sup> profile (120)
4	BottomClass[1]	bottom class boundary (*10 dB) in the 1 <sup>st</sup> profile
5	ClassWidth[1]	class width (*10 dB) in the 1 <sup>st</sup> profile
6	0xmm0A	[0A = id, mm = sub-block's length]
7	NofClasses[2]	number of classes in the 2 <sup>nd</sup> profile (120)
8	BottomClass[2]	bottom class boundary (*10 dB) in the 2 <sup>nd</sup> profile
9	ClassWidth[2]	class width (*10 dB) in the 2 <sup>nd</sup> profile
10	0xmm0A	[0A = id, mm = sub-block's length]
11	NofClasses[3]	number of classes in the 3 <sup>rd</sup> profile (120)
12	BottomClass[3]	bottom class boundary (*10 dB) in the 3 <sup>rd</sup> profile
13	ClassWidth[3]	class width (*10 dB) in the 3 <sup>rd</sup> profile
...	...	...

Table B.1.17. Results of the statistical analysis in profiles

Word number	Name	Comment
0	0x010B	[0B = id, prof_mask#1]
1	Sub-blockLength	2 * number of classes in the 1 <sup>st</sup> profile + 2
2..3	Histogram[1][1]	the first counter in the 1 <sup>st</sup> profile
4..5	Histogram[1][2]	the second counter in the 1 <sup>st</sup> profile
...	...	...
0	0x020B	[0B = id, prof_mask#2]
1	Sub-blockLength	2 * number of classes in the 2 <sup>nd</sup> profile + 2
2..3	Histogram[2][1]	the first counter in the 2 <sup>nd</sup> profile
4..5	Histogram[2][2]	the second counter in the 2 <sup>nd</sup> profile
...	...	...
0	0x040B	[0B = id, prof_mask#3]
1	Sub-blockLength	2 * number of classes in the 3 <sup>rd</sup> profile + 2
2..3	Histogram[3][1]	the first counter in the 3 <sup>rd</sup> profile
4..5	Histogram[3][2]	the second counter in the 3 <sup>rd</sup> profile
...	...	...

Table B.1.18. Header of the statistical analysis made in 1/1 OCTAVE or 1/3 OCTAVE mode

Word number	Name	Comment
0	0xnn13	[13 = id, nn = block's length]
1	NofHist	number of histograms (number of <b>1/1 OCTAVE</b> (15) or <b>1/3 OCTAVE</b> (45) filters and <b>TOTAL</b> value (1))
2	NofClasses	number of classes in the histogram (120)
3	BottomClass	bottom class boundary (*10 dB)
4	ClassWidth	class width (*10 dB)
...	...	...

Table B.1.19. Results of the statistical analysis made in 1/1 OCTAVE or 1/3 OCTAVE mode

Word number	Name	Comment
0	0x0114	[14 = id, 01 = number of the histogram ( <b>1/1 OCTAVE</b> or <b>1/3 OCTAVE</b> )]
1	Sub-blockLength	2 * NofClasses + 2 (242)
2..3	Histogram[1][1]	first counter for the first <b>1/1 OCTAVE</b> or <b>1/3 OCTAVE</b> filter
4..5	Histogram[1][2]	second counter for the first <b>1/1 OCTAVE</b> or <b>1/3 OCTAVE</b> filter
...	...	...
0	0x0214	[14 = id, 02 = number of the histogram ( <b>1/1 OCTAVE</b> or <b>1/3 OCTAVE</b> )]
1	Sub-blockLength	2 * NofClasses + 2 (242)
2..3	Histogram[2][1]	first counter for the second <b>1/1 OCTAVE</b> or <b>1/3 OCTAVE</b> filter
4..5	Histogram[2][2]	second counter for the second <b>1/1 OCTAVE</b> or <b>1/3 OCTAVE</b> filter
...	...	...
...	...	...
0	0xnn14	[14 = id, nn = NofHist = number of the last histogram ( <b>1/1 OCTAVE</b> or <b>1/3 OCTAVE</b> )]
1	Sub-blockLength	2 * NofClasses + 2 (242)
2..3	Histogram[nn][1]	first counter for the last <b>1/1 OCTAVE</b> or <b>1/3 OCTAVE</b> filter
4..5	Histogram[nn][2]	second counter for the last <b>1/1 OCTAVE</b> or <b>1/3 OCTAVE</b> filter
...	...	...

Table B.1.20. RT60 parameters block

Word number	Name	Comment
0	0xnn1A	[1A = id, nn = block's length]
1	RT60SaveMode	type of results in block 1B: 1 - results, 2 - averaged results

2	RT60Method_p	calculation method: 1 - <b>DECAY</b> 2 - <b>IMPULSE</b>
3	RT60Spectrum	type of spectrum: 1 - <b>1/1 OCTAVE</b> 2 - <b>1/3 OCTAVE</b>
4	buff_step_p	logger time step in milliseconds
5	ResponseTime_p	1..30
6	Reserved	reserved
7	DispSmooth	0..15
8	NoiseMargin	0..20 (*10dB)
9	RT60Averaging	0 - Off, 1 - On
10	RT60MeasureNo	averaging number
...	...	...

Table B.1.21. RT60 results block

Word number	Name	Comment
0	0x001B	[1B = id, 00 = block's length in the second word]
1	BlockLength	$7 + ((N2\_rt60\_freq - N1\_rt60\_freq + 1) + N\_max\_total) * 9$
2	LowestFreq	the lowest 1/3 OCTAVE frequency (*100 Hz) = 80
3	NTer	
4	NTotal	
5	N1_rt60_freq	
6	N2_rt60_freq	
7+i	calculated[i]	i=N1_rt60_freq..N2_rt60_freq; i=N_tercje.. N_tercje+N_max_total-1
8+i	edt[i]	i=N1_rt60_freq..N2_rt60_freq; i=N_tercje.. N_tercje+N_max_total-1
9+i	rt_20[i]	i=N1_rt60_freq..N2_rt60_freq; i=N_tercje.. N_tercje+N_max_total-1
10+i	rt_30[i]	i=N1_rt60_freq..N2_rt60_freq; i=N_tercje.. N_tercje+N_max_total-1
11+i	rt_user[i]	i=N1_rt60_freq..N2_rt60_freq; i=N_tercje.. N_tercje+N_max_total-1
12+i	cor_edt[i]	i=N1_rt60_freq..N2_rt60_freq; i=N_tercje.. N_tercje+N_max_total-1
13+i	cor_rt_20[i]	i=N1_rt60_freq..N2_rt60_freq; i=N_tercje.. N_tercje+N_max_total-1
14+i	cor_rt_30[i]	i=N1_rt60_freq..N2_rt60_freq; i=N_tercje.. N_tercje+N_max_total-1
15+i	cor_rt_user[i]	i=N1_rt60_freq..N2_rt60_freq; i=N_tercje.. N_tercje+N_max_total-1
...	...	...

Table B.1.22. RT60 averaged results block

Word number	Name	Comment
0	0x001C	[1C = id, 00 = block's length in the second word]
1	BlockLength	$7 + ((N2\_rt60\_freq - N1\_rt60\_freq + 1) + N\_max\_total) * 9$
2	LowestFreq	the lowest 1/3 OCTAVE frequency (*100 Hz) = 80
3	NTer	
4	NTotal	
5	N1_rt60_freq	
6	N2_rt60_freq	
7+i	calculated[i]	i=N1_rt60_freq..N2_rt60_freq; i=N_tercje.. N_tercje+N_max_total-1
8+i	edt[i]	i=N1_rt60_freq..N2_rt60_freq; i=N_tercje.. N_tercje+N_max_total-1
9+i	rt_20[i]	i=N1_rt60_freq..N2_rt60_freq; i=N_tercje.. N_tercje+N_max_total-1
10+i	rt_30[i]	i=N1_rt60_freq..N2_rt60_freq; i=N_tercje.. N_tercje+N_max_total-1
11+i	rt_user[i]	i=N1_rt60_freq..N2_rt60_freq; i=N_tercje.. N_tercje+N_max_total-1
12+i	cor_edt[i]	i=N1_rt60_freq..N2_rt60_freq; i=N_tercje.. N_tercje+N_max_total-1
13+i	cor_rt_20[i]	i=N1_rt60_freq..N2_rt60_freq; i=N_tercje.. N_tercje+N_max_total-1
14+i	cor_rt_30[i]	i=N1_rt60_freq..N2_rt60_freq; i=N_tercje.. N_tercje+N_max_total-1
15+i	cor_rt_user[i]	i=N1_rt60_freq..N2_rt60_freq; i=N_tercje.. N_tercje+N_max_total-1
...	...	...

**Table B.1.23. RPM results** (the presence depends on the **RPM\_On** position)

Word number	Name	Comment
0	0xnn1F	[1F = id, nn = block's length]
1	f_RpmRes.rpm[0]	RPM[0]
2	f_RpmRes.rpm[1]	RPM[1]
3	F_RpmRes.rpmx[0]	RPM Max[0]
4	F_RpmRes.rpmx[1]	RPM Max[1]
5	F_RpmRes.rpmn[0]	RPM Min[0]
6	F_RpmRes.rpmn[1]	RPM Min[1]
...	...	...

**Table B.1.24. SETUP data**

Word number	Name	Comment
0	0x0020	[20 = id, 00 = block's length in the second word]
1	BlockLength	length of the block
2..BlockLength-1	SetupData	saved setup values

Table B.1.25. Header of the file from the logger

Word number	Name	Comment
0	0xnn0F	[0F = id, nn = header's length]
1	BuffTSec	logger time step - full seconds part
2	BuffTMiliseC	logger time step - milliseconds part
3	LowestFreq	the lowest <b>1/1 OCTAVE</b> or <b>1/3 OCTAVE</b> frequency (*100 Hz)
4	NOctTer	number of <b>1/1 OCTAVE</b> or <b>1/3 OCTAVE</b> results
5	NOctTerTot	number of <b>TOTAL</b> values
6..7	BuffLength	logger length (bytes)
8..9	RecsInBuff	number of records in the logger
10..11	RecsInObserv	number of records in the observation period equal to: number of records in the logger + number of records not saved



**Note:** The current logger time step in seconds can be obtained from the formulae:  
 $T = \text{BuffTSec} + \text{BuffTMiliseC} / 1000.$

Table B.1.26. Contents of the file from the logger

Word number	Name	Comment
0..(BuffLength/2-1)		result#1, result#2, ... result#(BuffLength/2-1)

Table B.1.27. File-end-marker

Word number	Name	Comment
0	0xFFFF	file end marker

## B.2. Structure of the file containing results from logger's file

File header - cf. Tab. B.1.1.

Unit and software specification - cf. Tab. B.1.2.

USER'S text - cf. Tab. B.1.3.

Parameters and global settings - cf. Tab. B.1.4\_SLM or Tab. B.1.4\_VLM.

MEASUREMENT TRIGGER settings - cf. Tab. B.1.5.

LOGGER TRIGGER settings - cf. Tab. B.1.6.

RECORDER TRIGGER settings - cf. Tab. B.1.7.

EXTended I/O settings - cf. Tab. B.1.8.

Special settings for profiles - cf. Tab. B.1.9\_SLM or Tab. B.1.9\_VLM.

**Header of the FFT analysis** - cf. Tab. B.1.13.

**Header of the file from the logger** - cf. Tab. B.1.25.

**Contents of the file from the logger** - cf. Tab. B.1.26. and the description in B.2.1.

File-end-marker - cf. Tab. B.1.27.

## B.2.1 The contents of the files in the logger

The records with the results and (starting from the internal software version 2.30) the records with the state of the markers as well as the records with the breaks in the results registration are saved in the files in the logger.

### B.2.1.1 Record with the results

The contents of the record with the results depends on the selected device mode, measurement function and the value set in the **LOGGER** position of the **PROFILE x** and **SPECTRUM** sub-lists. The following elements can be present (in the given sequence):

- (1) results of the measurement from the first profile if the corresponding **LOGGER** position was active (*paths: MENU / INPUT / PROFILE 1 / LOGGER PEAK; MENU / INPUT / PROFILE 1 / LOGGER MAX; MENU / INPUT / PROFILE 1 / LOGGER MIN; INPUT / PROFILE 1 / LOGGER RMS*); up to four words are written:

<result1> - **PEAK** result, depending on the value of BufferP[1] (cf. Tab. B.1.9)

<result2> - **MAX** result, depending on the value of BufferP[1] (cf. Tab. B.1.9)

<result3> - **MIN** result, depending on the value of BufferP[1] (cf. Tab. B.1.9)

<result4> - **RMS** result, depending on the value of BufferP[1] (cf. Tab. B.1.9)

- (2) results of the measurement from the second profile if the corresponding **LOGGER** position was active (*paths: MENU / INPUT / PROFILE 2 / LOGGER PEAK; MENU / INPUT / PROFILE 2 / LOGGER MAX; MENU / INPUT / PROFILE 2 / LOGGER MIN; INPUT / PROFILE 2 / LOGGER RMS*); up to four words are written:

<result1> - **PEAK** result, depending on the value of BufferP[2] (cf. Tab. B.1.9)

<result2> - **MAX** result, depending on the value of BufferP[2] (cf. Tab. B.1.9)

<result3> - **MIN** result, depending on the value of BufferP[2] (cf. Tab. B.1.9)

<result4> - **RMS** result, depending on the value of BufferP[2] (cf. Tab. B.1.9)

- (3) results of the measurement from the third profile if the corresponding **LOGGER** position was active (*paths: MENU / INPUT / PROFILE 3 / LOGGER PEAK; MENU / INPUT / PROFILE 3 / LOGGER MAX; MENU / INPUT / PROFILE 3 / LOGGER MIN; INPUT / PROFILE 3 / LOGGER RMS*); up to four words are written:

<result1> - **PEAK** result, depending on the value of BufferP[3] (cf. Tab. B.1.9)

<result2> - **MAX** result, depending on the value of BufferP[3] (cf. Tab. B.1.9)

<result3> - **MIN** result, depending on the value of BufferP[3] (cf. Tab. B.1.9)

<result4> - **RMS** result, depending on the value of BufferP[3] (cf. Tab. B.1.9)

- (4) results of **1/1 OCTAVE** analysis if **1/1 OCTAVE** analysis was selected as the measurement function and the **LOGGER** position of the **SPECTRUM** sub-list was activated (*path: MENU / INPUT / SPECTRUM / LOGGER: [N]*); the sequence of words is written:

<flags> <Octave[1]> <Octave[2]> ... <Octave[NOct+NOctTot]>

where:

flags = 1 - the overload detected, 0 - the overload not detected

Octave[i] - the result of **1/1 OCTAVE** analysis (\*10 dB); i = 1..NOct+NOctTot (1..16)

- (5) results of **1/3 OCTAVE** analysis if **1/3 OCTAVE** analysis was selected as the measurement function and the **LOGGER** position of the **SPECTRUM** sub-list was activated (*path: MENU / INPUT / SPECTRUM / LOGGER: [N]*); the sequence of words is written:

<flags> <Terave[1]> <Terave [2]> ... <Terave[NT]>

where:

flags = 1- the overload detected, 0 - the overload not detected

Terave[i] - the result of **1/3 OCTAVE** analysis (\*10 dB); i = 1..NT (1..46 or 1..31)

The value of NT parameter depends on the **LOGGER STEP** selection (*path: MENU / INPUT / MEASUREMENT SETUP / LOGGER STEP*). For the logger steps greater than 2 ms the value of NT is equal to NTer+NTerTot: the outputs from all **1/3 OCTAVE** filters from 0.8 Hz up to 20 kHz and the TOTAL value are written (45 + 1 = 46). For the logger step equal to 2 ms the value of NT is equal to 31: the outputs from **1/3 OCTAVE** filters from 25 Hz up to 20 kHz and the TOTAL values are written (30 + 1 = 31).

(6) RPM result if the corresponding **LOGGER** position was active (*path: MENU / INPUT / RPM / RPM*) written as two words:

<word1><word2>

WYK\_OKR\_OBR = 64

$m = ((res[1] \& 0x00007f) \ll 16) | ((res[0] \& 0x007fff) \ll 1)$

$w = ((res[1] \gg 8) \& 0x00007f) - 23 - WYK\_OKR\_OBR$

$d = m * pow(2.0, w)$

**RPS** = 1/d

**RPM** = 60/d

### B.2.1.2 Record with the state of the markers

The record with the state of the markers consists of one word:

<0x8nnn>

in which 12 bits nnn denote the state of the markers:

b11 = state of #12 marker

b10 = state of #11 marker

...

b1 = state of #2 marker

b0 = state of #1 marker

### B.2.1.3 Record with the breaks in the results registration

The record with the breaks in the results registration consists of four words:

<0xB0ii> <0xB1jj> <0xB2kk> <0xB3nn>

in which ii, jj, kk, nn bytes denote 4-bytes counter of left or skipped records: nnkkjjii (ii is the least significant byte, nn – the most significant byte).

## B.3. Structure of the file with the results from the SLM mode

File header - cf. Tab. B.1.1.

Unit and software specification - cf. Tab. B.1.2.

USER'S text - cf. Tab. B.1.3.

Parameters and global settings - cf. Tab. B.1.4\_SLM or Tab. B.1.4\_VLM.

MEASUREMENT TRIGGER settings - cf. Tab. B.1.5.

LOGGER TRIGGER settings - cf. Tab. B.1.6.

RECORDER TRIGGER settings - cf. Tab. B.1.7.

EXTended I/O settings - cf. Tab. B.1.8.

Special settings for profiles - cf. Tab. B.1.9\_SLM.

**Main results** - cf. Tab. B.1.10\_SLM.

Statistical levels - cf. Tab. B.1.15.

Header of the statistical analysis in profiles (the presence depends on the **SAVE STAT.** position) - cf. Tab. B.1.16.

Results of the statistical analysis in profiles (the presence depends on the **SAVE STAT.** position) - cf. Tab. B.1.17.  
File-end-marker - cf. Tab. B.1.27.

#### **B.4. Structure of the file with the results from the VLM mode**

File header - cf. Tab. B.1.1.  
Unit and software specification - cf. Tab. B.1.2.  
USER'S text - cf. Tab. B.1.3.  
Parameters and global settings - cf. Tab. B.1.4\_SLM or Tab. B.1.4\_VLM.  
MEASUREMENT TRIGGER settings - cf. Tab. B.1.5.  
LOGGER TRIGGER settings - cf. Tab. B.1.6.  
RECORDER TRIGGER settings - cf. Tab. B.1.7.  
EXTended I/O settings - cf. Tab. B.1.8.  
Special settings for profiles - cf. Tab. B.1.9\_VLM.  
**Main results** - cf. Tab. B.1.10\_VLM.  
RPM results - cf. Tab. B.1.23. (the presence depends on the **RPM\_On** flag).  
File-end-marker - cf. Tab. B.1.27.

#### **B.5. Structure of the file with the results from the DOSE METER mode**

File header - cf. Tab. B.1.1.  
Unit and software specification - cf. Tab. B.1.2.  
USER'S text - cf. Tab. B.1.3.  
Parameters and global settings - cf. Tab. B.1.4\_SLM or Tab. B.1.4\_VLM.  
MEASUREMENT TRIGGER settings - cf. Tab. B.1.5.  
LOGGER TRIGGER settings - cf. Tab. B.1.6.  
RECORDER TRIGGER settings - cf. Tab. B.1.7.  
EXTended I/O settings - cf. Tab. B.1.8.  
Special settings for profiles - cf. Tab. B.1.9.  
**Main results** - cf. Tab. B.1.10\_DM.  
Statistical levels - cf. Tab. B.1.15.  
Header of the statistical analysis (the presence depends on the **SAVE STAT.** position) - cf. Tab. B.1.16.  
Results of the statistical analysis (the presence depends on the **SAVE STAT.** position) - cf. Tab. B.1.17.  
File-end-marker - cf. Tab. B.1.27.

#### **B.6. Structure of the file with 1/1 OCTAVE analysis results**

File header - cf. Tab. B.1.1.  
Unit and software specification - cf. Tab. B.1.2.  
USER'S text - cf. Tab. B.1.3.  
Parameters and global settings - cf. Tab. B.1.4\_SLM or Tab. B.1.4\_VLM.  
MEASUREMENT TRIGGER settings - cf. Tab. B.1.5.  
LOGGER TRIGGER settings - cf. Tab. B.1.6.  
RECORDER TRIGGER settings - cf. Tab. B.1.7.  
EXTended I/O settings - cf. Tab. B.1.8.  
Special settings for profiles - cf. Tab. B.1.9\_SLM or Tab. B.1.9\_VLM.  
Main results - cf. Tab. B.1.10\_SLM or Tab. B.1.10\_VLM.  
Statistical levels - cf. Tab. B.1.15.  
**RPM results** - cf. Tab. B.1.23. (VLM only - the presence depends on the **RPM\_On** flag).  
**1/1 OCTAVE analysis results** - cf. Tab. B.1.11.  
**1/1 OCTAVE analysis MIN-results** (the presence depends on the **MIN SPECT.** position) - cf. Tab. B.1.11.



**1/1 OCTAVE analysis MAX-results** (the presence depends on the **MAX SPECT.** position) - cf. Tab. B.1.11.

Header of the statistical analysis (the presence depends on the **SAVE STAT.** position) - cf. Tab. B.1.16.

Results of the statistical analysis (the presence depends on the **SAVE STAT.** position) - cf. Tab. B.1.17.

Header of the statistical analysis performed in 1/1 OCTAVE mode (SLM only - the presence depends on the **SAVE STAT.** position) - cf. Tab. B.1.18.

Results of the statistical analysis performed in 1/1 OCTAVE mode (SLM only - the presence depends on the **SAVE STAT.** position) - cf. Tab. B.1.19.

File-end-marker - cf. Tab. B.1.27.

## B.7. Structure of the file with 1/3 OCTAVE analysis results

File header - cf. Tab. B.1.1.

Unit and software specification - cf. Tab. B.1.2.

USER'S text - cf. Tab. B.1.3.

Parameters and global settings - cf. Tab. B.1.4\_SLM or Tab. B.1.4\_VLM.

MEASUREMENT TRIGGER settings - cf. Tab. B.1.5.

LOGGER TRIGGER settings - cf. Tab. B.1.6.

RECORDER TRIGGER settings - cf. Tab. B.1.7.

EXTended I/O settings - cf. Tab. B.1.8.

Special settings for profiles - cf. Tab. B.1.9\_SLM or Tab. B.1.9\_VLM.

Main results - cf. Tab. B.1.10\_SLM or Tab. B.1.10\_VLM.

Statistical levels - cf. Tab. B.1.15.

**RPM results** - cf. Tab. B.1.23. (VLM only - the presence depends on the **RPM\_On** flag).

**1/1 OCTAVE analysis results** - cf. Tab. B.1.11.

**1/1 OCTAVE analysis MIN-results** (the presence depends on the **MIN SPECT.** position) - cf. Tab. B.1.11.

**1/1 OCTAVE analysis MAX-results** (the presence depends on the **MAX SPECT.** position) - cf. Tab. B.1.11.

Header of the statistical analysis (the presence depends on the **SAVE STAT.** position) - cf. Tab. B.1.16.

Results of the statistical analysis (the presence depends on the **SAVE STAT.** position) - cf. Tab. B.1.17.

Header of the statistical analysis performed in 1/3 OCTAVE mode (SLM only - the presence depends on the **SAVE STAT.** position) - cf. Tab. B.1.18.

Results of the statistical analysis performed in 1/3 OCTAVE mode (SLM only - the presence depends on the **SAVE STAT.** position) - cf. Tab. B.1.19.

File-end-marker - cf. Tab. B.1.27.

## B.8. Structure of the file with the FFT analysis results

File header - cf. Tab. B.1.1.

Unit and software specification - cf. Tab. B.1.2.

USER'S text - cf. Tab. B.1.3.

Parameters and global settings - cf. Tab. B.1.4\_SLM or Tab. B.1.4\_VLM.

MEASUREMENT TRIGGER settings - cf. Tab. B.1.5.

LOGGER TRIGGER settings - cf. Tab. B.1.6.

RECORDER TRIGGER settings - cf. Tab. B.1.7.

EXTended I/O settings - cf. Tab. B.1.8.

Special settings for profiles - cf. Tab. B.1.9\_SLM or Tab. B.1.9\_VLM.

Main results - cf. Tab. B.1.10\_SLM or Tab. B.1.10\_VLM.

Statistical levels - cf. Tab. B.1.15.

**RPM results** - cf. Tab. B.1.23. (VLM only - the presence depends on the **RPM\_On** flag).

**Header of the FFT analysis** - cf. Tab. B.1.13.

**FFT analysis results** - cf. Tab. B.1.14.

Header of the statistical analysis (the presence depends on the **SAVE STAT.** position) - cf. Tab. B.1.16.

Results of the statistical analysis (the presence depends on the **SAVE STAT.** position) - cf. Tab. B.1.17.

File-end-marker - cf. Tab. B.1.27.

## B.9. Structure of the file containing RT60 functions results

File header - cf. Tab. B.1.1.  
Unit and software specification - cf. Tab. B.1.2.  
USER'S text - cf. Tab. B.1.3.  
Parameters and global settings - cf. Tab. B.1.4\_SLM or Tab. B.1.4\_VLM.  
MEASUREMENT TRIGGER settings - cf. Tab. B.1.5.  
LOGGER TRIGGER settings - cf. Tab. B.1.6.  
RECORDER TRIGGER settings - cf. Tab. B.1.7.  
EXTended I/O settings - cf. Tab. B.1.8.  
Special settings for profiles - cf. Tab. B.1.9\_SLM.  
Main results - cf. Tab. B.1.10\_SLM.  
Statistical levels - cf. Tab. B.1.15.  
**RT60 parameters block** - cf. Tab. B.1.20.  
**RT60 results** - cf. Tab. B.1.21. or **RT60 averaged results** - cf. Tab. B.1.22.  
File-end-marker - cf. Tab. B.1.27.

## B.10. Structure of the SETUP file

File header - cf. Tab. B.1.1.  
Unit and software specification - cf. Tab. B.1.2.  
**SETUP data** - cf. Tab. B.1.24  
File-end-marker - cf. Tab. B.1.27.

## B.11. DATE and TIME

Following function written in C explains how the date and time are coded:

```
void ExtractDateTime(int date, int time, int dt[])
{
    int sec, year;

    sec = ((0xffff&time)<<1); /* time<<1; */
    dt[0] = sec%60; /* sec */
    dt[1] = (sec/60)%60; /* min */
    dt[2] = sec/3600; /* hour */

    dt[3] = date&0x1F; /* day */
    dt[4] = (date>>5)&0x0F; /* month */
    year = (date>>9) & 0x07F;
    dt[5] = year+2000; /* year */
}
```

## C. DATA SPECIFICATIONS

### C.1. Specification of G7 as sound level meter

The **G7** instrument working as the SLM meets requirements of the IEC 61672-1 for Type 1 instruments.

#### **System configuration:**

- **G7** sound analyser
- **SV 12L** microphone preamplifier
- **ACO 7052H** measuring prepolarised free-field microphone (1/2", nominal sensitivity 22 mV / Pa, polarisation 0 V)
- **SV 30A** acoustic calibrator (or equivalent e.g. **B&K 4231**)

#### **Accessories included:**

<b>SV 12L</b>	Microphone preamplifier
<b>SC 16</b>	USB 1.1 cable
<b>SC 35</b>	Cinch (plug) to BNC (plug) cable (2 m)

#### **Accessories available:**

<b>SC 26</b>	Extension cable TNC (plug) to TNC (socket) (3 m)
<b>SA 17A</b>	External battery pack
<b>SA 22</b>	Windscreen

#### **Measured quantities**

The measured quantities for SLM mode are: **PEAK, SPL, MAX, MIN, LEQ, RMS, SEL, Ltm3, Ltm5, LEPd, OVL, Lnn** and additionally, the measured quantities for **DOSE METER** mode are: **DOSE, D8\_h, LAV, TLAV, SEL8, PSEL, E, E\_8h**. The definitions for mentioned parameters are given in Appendix D.

#### **Additional functions:**

Overload: See chapter 3 or Appendix A.

Under-range: See Appendix A.

Battery state indication: See chapter 3.

#### **Conformance testing**

This chapter contains the information needed to conduct conformance testing according to the IEC 616772 standard.

#### **Mounting for acoustical tests**

The microphone **ACO 7052H** and preamplifier **SV 12L** can be connected to the instrument in two different ways:

- directly attached on meter
- with microphone preamplifier holder connected with SLM with the **SC 26** extension cable

#### **Electrical substitute for microphones**

To obtain a BNC type electrical input, a microphone must be replaced by electrical microphone impedance and cartridge capacitance 18 pF.



**Notice: For all electrical tests the microphone compensation filter must be set to OFF!**  
(path: MENU / SETUP / COMPENSATION FILTER / OFF).



**Notice:** *For all free field tests the FREE FIELD filter must be set to ON!* (path: MENU / SETUP / COMPENSATION **FILTER** / FREE FIELD).

### Measuring ranges:

"LOW" and "HIGH"

### Linear operating ranges for the LEQ values

The starting point at which user shall begin tests of level linearity is 94.0 dB for the frequencies specifies below.

**Table C.1. Linear operating ranges for LEQ value (1 kHz sinusoidal signal, different weighting filters)**

RANGE	Linear operating range (with the error < 0.7 dB) (LEQ for the sinusoidal signal and microphone sensitivity 22 mV/Pa)	
LOW	from 25 dB "A" - weighting	to 120 dB "A" - weighting
LOW	from 25 dB "C" - weighting	to 120 dB "C" - weighting
LOW	from 33 dB "Z" - weighting	to 120 dB "Z" - weighting
HIGH	from 36 dB "A" - weighting	to 137 dB "A" - weighting
HIGH	from 36 dB "C" - weighting	to 137 dB "C" - weighting
HIGH	from 46 dB "Z" - weighting	to 137 dB "Z" - weighting

**Table C.2. Linear operating ranges for LEQ value (31.5 Hz sinusoidal signal, different weighting filters)**

RANGE	Linear operating range for frequency 31.5 Hz (LEQ for the sinusoidal signal and nominal microphone sensitivity 22 mV/Pa)	
LOW	from 25 dB "A"- weighting	to 75.6 dB "A"- weighting
HIGH	from 36 dB "A"- weighting	to 98.6 dB "A"- weighting

**Table C.3. Linear operating ranges for LEQ value (4 kHz sinusoidal signal, different weighting filters)**

RANGE	Linear operating range for frequency 4 kHz (LEQ for the sinusoidal signal and nominal microphone sensitivity 22 mV/Pa)	
LOW	from 25 dB "A"- weighting	to 116 dB "A"- weighting
HIGH	from 36 dB "A"- weighting	to 139 dB "A"- weighting

**Table C.5. Linear operating ranges for LEQ value (8 kHz sinusoidal signal, different weighting filters)**

RANGE	Linear operating range for frequency 8 kHz (LEQ for the sinusoidal signal and nominal microphone sensitivity 22 mV/Pa)	
LOW	from 25 dB "A"- weighting	to 113.9 dB "A"- weighting
HIGH	from 36 dB "A"- weighting	to 136.9 dB "A"- weighting

Table C.5. Linear operating ranges for LEQ value (12.5 kHz sinusoidal signal, different weighting filters)

RANGE	Linear operating range for frequency 12.5 kHz (LEQ for the sinusoidal signal and nominal microphone sensitivity 22 mV/Pa)	
LOW	from 25 dB "A"- weighting	to 110.7 dB "A"- weighting
HIGH	from 36 dB "A"- weighting	to 133.7 dB "A"- weighting

Measuring range for the Peak value:

Table C.6. Linear operating ranges for PEAK value (1 kHz sinusoidal signal, different weighting filters)

Linear operating range PEAK (for the microphone sensitivity 22 mV/Pa)	
RANGE	Max Peak value
LOW	123 dB "A" - weighting
LOW	123 dB "C" - weighting
LOW	123 dB "Z" - weighting
HIGH	140 dB "A" - weighting
HIGH	140 dB "C" - weighting
HIGH	140 dB "Z" - weighting



**Notice:** For the signals with the crest factor  $n > 1.41$  upper measuring range of the RMS (LEQ and SPL) is reduced. The valid upper limit can be calculated according to the below given formula:

$A_n = 137 - 20 \log(n/\sqrt{2})$ , where  $A$  is the upper limit for the sinusoidal signal

Example: For the crest factor  $n = 10$  the upper limit is  $A_{10} = 120 \text{ dB}$

**Measuring frequency range of the acoustic pressure (-3 dB):** 10 Hz ÷ 20 000 Hz

**Basic measurement error of the acoustic pressure:**

< 0.7 dB (measured for reference conditions, see below).

**Weighting filters** (see appendix D):

- **Z** meeting requirements of the IEC 61672-1 standard for the Type 1 "Z" filter
- **A** meeting requirements of the IEC 651 and IEC 61672-1 standard for the Type 1 "A" filter
- **C** meeting requirements of the IEC 651 and IEC 61672-1 standard for the Type 1 "C" filter

**Special filter:**

- **Diffuse field compensation filter** filter changing the complete instrument acoustic frequency response in the diffuse acoustic field.

**Self-generated noise**

(measured with the microphone equivalent impedance 18 pF)

- "Z" weighting < 11  $\mu\text{VRMS}$
- "A" weighting < 6  $\mu\text{VRMS}$

- "C" weighting **< 6  $\mu$ V<sub>RMS</sub>**

**RMS detector:**

- Digital **"True RMS" with Peak detection**
- Resolution **0.1 dB**
- Range **999.9 dB**
- Crest Factor **unlimited** (for signals in 20 kHz band)

**Time weighting characteristics** (Exponential averaging)

**SLOW:** "S" according to IEC 61672 Type 1, Equivalent Time Constant 1000 ms

**FAST:** "F" according to IEC 61672 Type 1, Equivalent Time Constant 250 ms

**IMPULSE:** "I" according to IEC 61672 Type 1, Equivalent Time Constant 35 ms, Hold Time 1500 s

**Reference conditions:**

- Type of the acoustic field **free**
- Reference acoustic pressure: **114.0 dB** (related to 20  $\mu$ Pa)
- Reference frequency: **1000 Hz**
- Reference temperature: **+20°C**
- Reference relative humidity: **65 %**
- Reference static pressure: **1013 hPa**
- Reference incidence direction: **perpendicular to the microphone diaphragm**

**Calibration:**

**Acoustical - with the SV 30A acoustic calibrator** (or equivalent)

Reference level for free field calibration **113.9 dB**

Reference level for diffuse field calibration **114.0 dB**

(See **ACO 7052H** free field correction table below)

**Microphone****ACO 7052H**

type: prepolarised free-field ½" condenser microphone

nominal sensitivity: 22 mV/Pa (corresponding to -33 dBV/Pa re 1 V/Pa)

capacitance: 18 pF

preamplifier **SV 12L**

nominal preamplifier attenuation: 0.7 dB

**Maximum level of sound pressure level, which can affect the microphone without its destruction:**  
**155 dB.**

**Maximum peak voltage of input sinusoidal signal, which can be applied to the SLM without its destruction:** 30 V Peak-Peak.

**Environmental, electrostatic and radio frequency criteria:**

**Warm-up time:** 1 min. (for 0.1 dB accuracy)

Typical stabilisation time after change in environmental conditions is 1 minute.

Typical stabilisation time after change the temperature in environmental conditions by 20°C is 1 hour.



**Notice:** When the instruments are moved from a warm environment with high humidity, to a colder environment, care should be taken not to produce condensation inside the instruments. In this case, much longer stabilization periods may be necessary.

**Effect of humidity:** < 0.5 dB (for 30%<RH<90% at 40°C and 1000 Hz)

**Effect of magnetic field:** < 15 dB (A) or < 25 dB (Z) (for 80 A/m and 50 Hz)

**Effect of radio frequency fields:** – meet requirements of IEC 61672-1

The greatest susceptibility (the least immunity) is achieved when in the SLM the **Z** weighting filter and **FAST** time weighting are selected and the **SPL** measurements are considered.

The greatest susceptibility is achieved when the SLM is placed parallel to the radio frequency field. In addition, if there is an extension cable, the greatest susceptibility is achieved when the SLM and cable is placed along field and the cable is coiled as solenoid.

**Effect of electrostatic discharge:** – meet requirements of IEC 61672-1

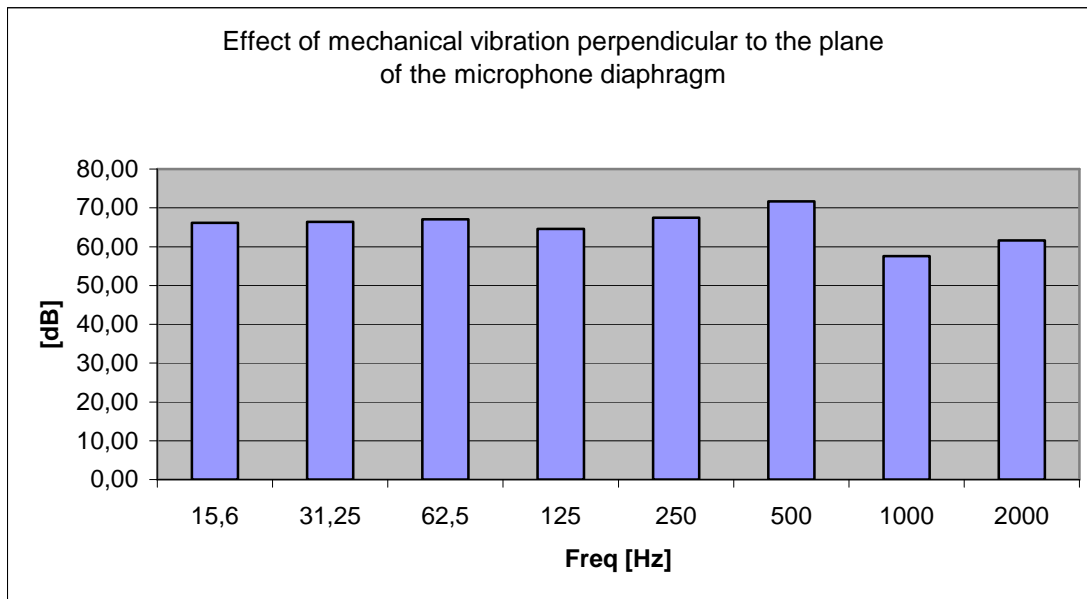
The electrostatic discharge may temporarily affect on the measurement results. The influence disappears immediately in the absence of exposure to the electrostatic discharges. The changes in instrument's operation state or its configuration and any corruption of stored data were not observed.

**Effect of ambient pressure:** < 0.01 dB/kPa

**Effect of temperature:** < 0.5 dB (from -10°C to + 50°C)  
**Operating range** – from -10°C to + 50°C  
**Storage** – from -20°C to + 60°C

**Effect of Vibration:** < 72 dB (from 20 Hz to 1000 Hz at 1 m/s<sup>2</sup>)

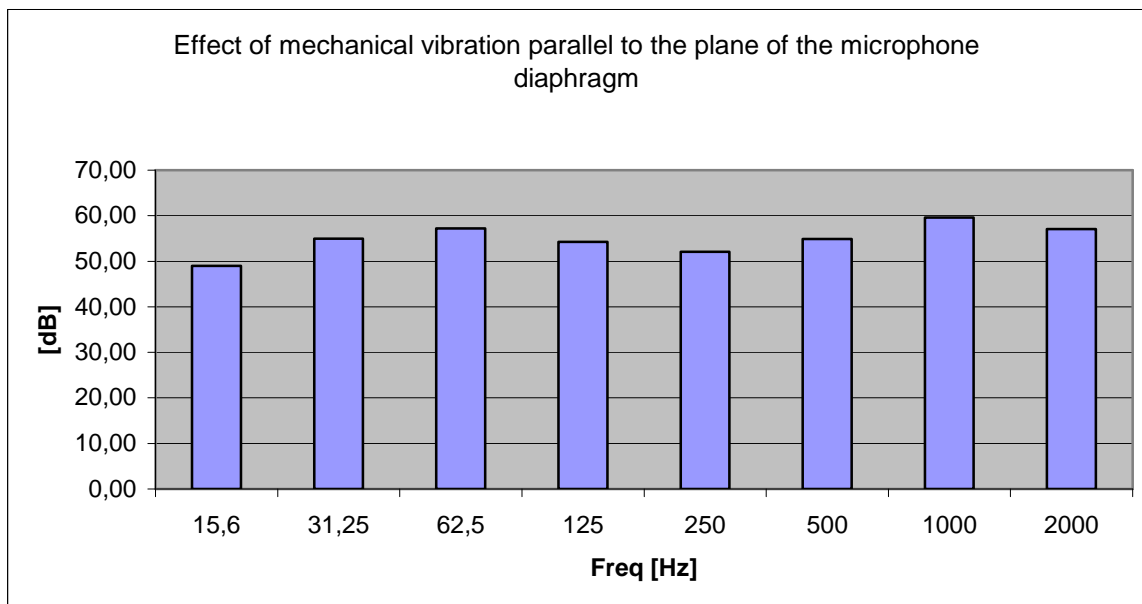
Microphone type **ACO 7052H** and the preamplifier type **SV 12L** on the SLM are mounted on the shaker. Vibration is applied in a direction perpendicular or parallel to the plane of the microphone diaphragm.



**Effect of mechanical vibration perpendicular to the plane of microphone diaphragm**

**Table C.7. Typical effect of vibration perpendicular to the plane of microphone diaphragm**

f (Hz)	15.6	31.25	62.5	125	250	500	1000	2000
Typical effect of vibration [dB]	66.13	66.36	67.03	64.55	67.46	71.66	57.59	61.58



**Effect of mechanical vibration parallel to the plane of microphone diaphragm**

**Table C.9. Typical effect of vibration parallel to the plane of microphone diaphragm**

f (Hz)	15.6	31.25	62.5	125	250	500	1000	2000
Typical effect of vibration [dB]	48.99	54.98	57.19	54.25	52.11	54.89	59.60	57.07



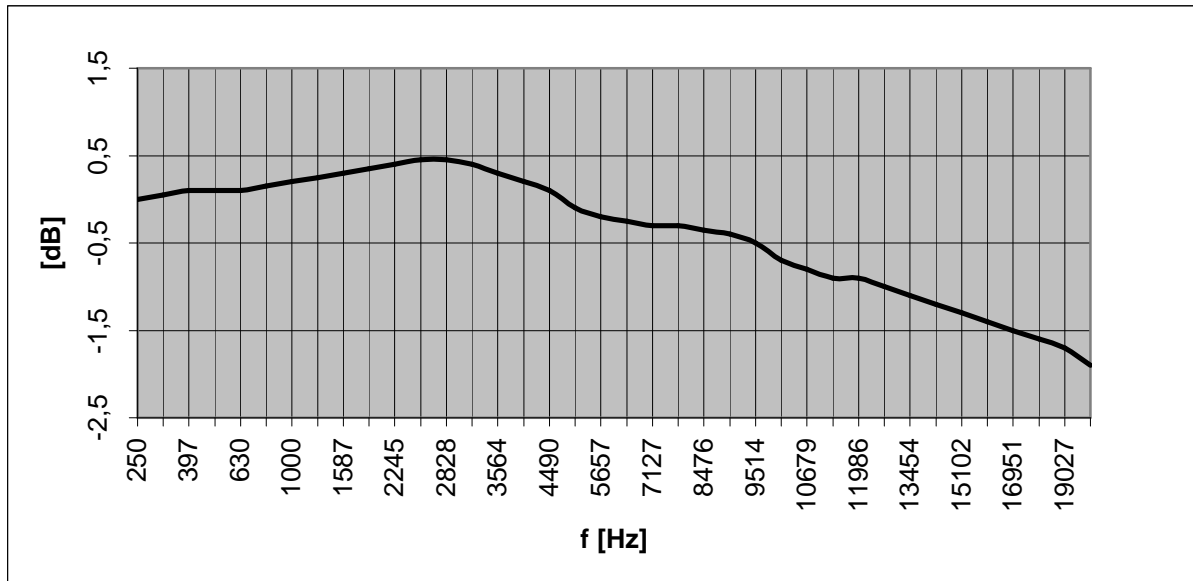
**Effect of accessories:****Effect of the SA 22 windscreen****SA 22 Free Field Characteristics**

Table C.10. Effect of the SA 22 windscreen

Frequency [Hz]	250	315	400	500	630	800	1000	1250	1600	2000
Effect of the <b>SA 22</b> windscreen [dB]	0.06	0.06	0.08	0.10	0.08	0.16	0.20	0.30	0.35	0.43
Frequency [Hz]	2500	3150	4000	5000	6300	8000	10000	12500	16000	20000
Effect of the <b>SA 22</b> windscreen [dB]	0.45	0.41	0.12	-0.10	0.02	-0.18	-0.20	-0.77	-0.73	-1.48

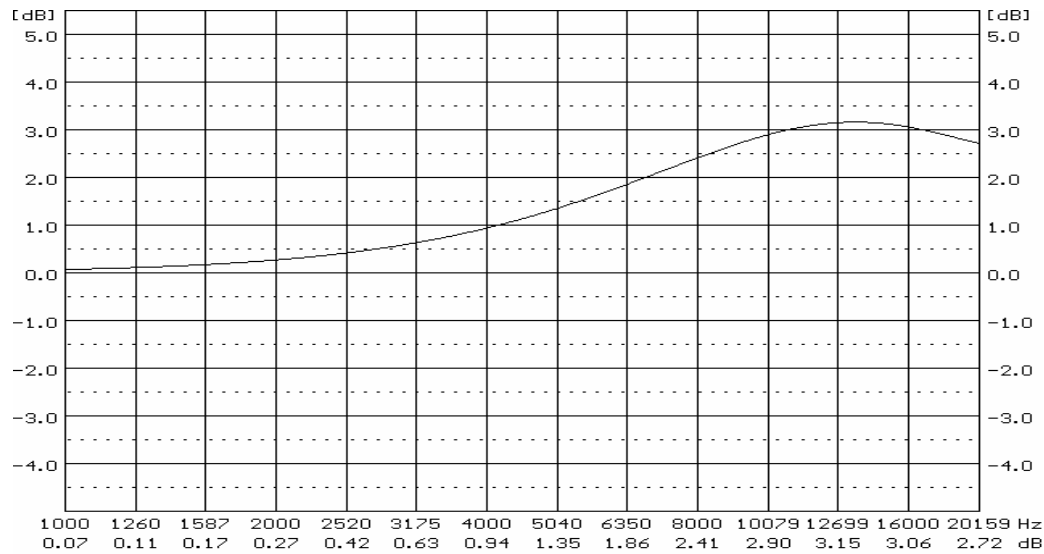
Table C.11. ACO 7052H microphone's pressure free field correction coefficients for the 0 deg incidence

Freq. units	20 Hz	25 Hz	31.5 Hz	40 Hz	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz	200 Hz	250 Hz	315 Hz	400 Hz	500 Hz	630 Hz
0 deg [dB]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	0.01	0.01	0.04

Freq. units	800 Hz	1.0 kHz	1.25 kHz	1.6 kHz	2.0 kHz	2.5 kHz	3.15 kHz	4.0 kHz	5.0 kHz	6.3 kHz	8.0 kHz	10.0 kHz	12.5 kHz	16.0 kHz	20.0 kHz
0 deg [dB]	0.08	<b>0.08</b>	0.12	0.19	0.33	0.62	0.79	1.27	2.06	2.99	4.01	3.82	6.81	9.22	10.90

## Diffuse field compensation filter

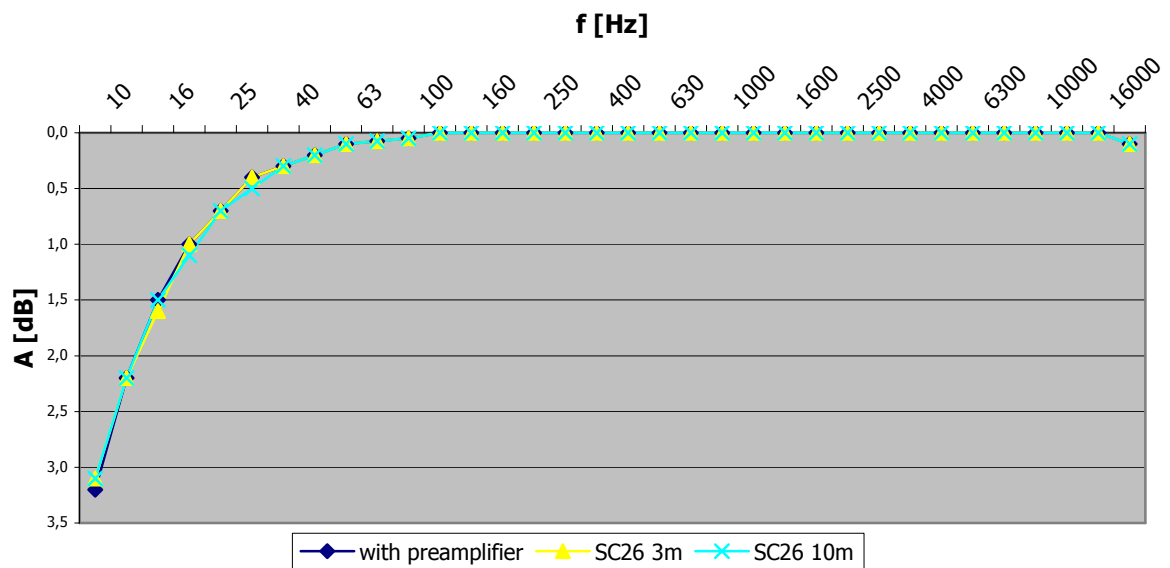


## Effect of an Extension cable length 3 and 10 meters

Table C.12. Typical effect of vibration perpendicular to the plane of microphone diaphragm

f [Hz]	Attenuation [dB] for					
	Input voltage 1 V <sub>RMS</sub>			Input voltage 4 V <sub>RMS</sub>		
	with SV 12L preamplifier	with SC 26 / 3 m	with SC 26 / 10 m	with SV 12L preamplifier	with SC 26 / 3 m	with SC 26 / 10 m
10	3.1	3.1	3.1	3.2	3.2	3.2
12.5	2.2	2.2	2.2	2.2	2.2	2.2
16	1.5	1.6	1.5	1.5	1.5	1.5
20	1.0	1.0	1.1	1.0	1.0	1.0
25	0.7	0.7	0.7	0.6	0.6	0.6
31.5	0.5	0.4	0.5	0.4	0.4	0.4
40	0.3	0.3	0.3	0.3	0.2	0.2
50	0.2	0.2	0.2	0.2	0.1	0.1
63	0.1	0.1	0.1	0.1	0.1	0.1
80	0.1	0.1	0.1	0.1	0.0	0.0
100	0.1	0.1	0.1	0.0	0.0	0.0
125	0.1	0.0	0.0	0.0	0.0	0.0
160	0.0	0.0	0.0	0.0	0.0	0.0
200	0.0	0.0	0.0	0.0	0.0	0.0
250	0.0	0.0	0.0	0.0	0.0	0.0
315	0.0	0.0	0.0	0.0	0.0	0.0
400	0.0	0.0	0.0	0.0	0.0	0.0
500	0.0	0.0	0.0	0.0	0.0	0.0
630	0.0	0.0	0.0	0.0	0.0	0.0
800	0.0	0.0	0.0	0.0	0.0	0.0
1000	0.0	0.0	0.0	0.0	0.0	0.0
1250	0.0	0.0	0.0	0.0	0.0	0.0
1600	0.0	0.0	0.0	0.0	0.0	0.0
2000	0.0	0.0	0.0	0.0	0.0	0.0

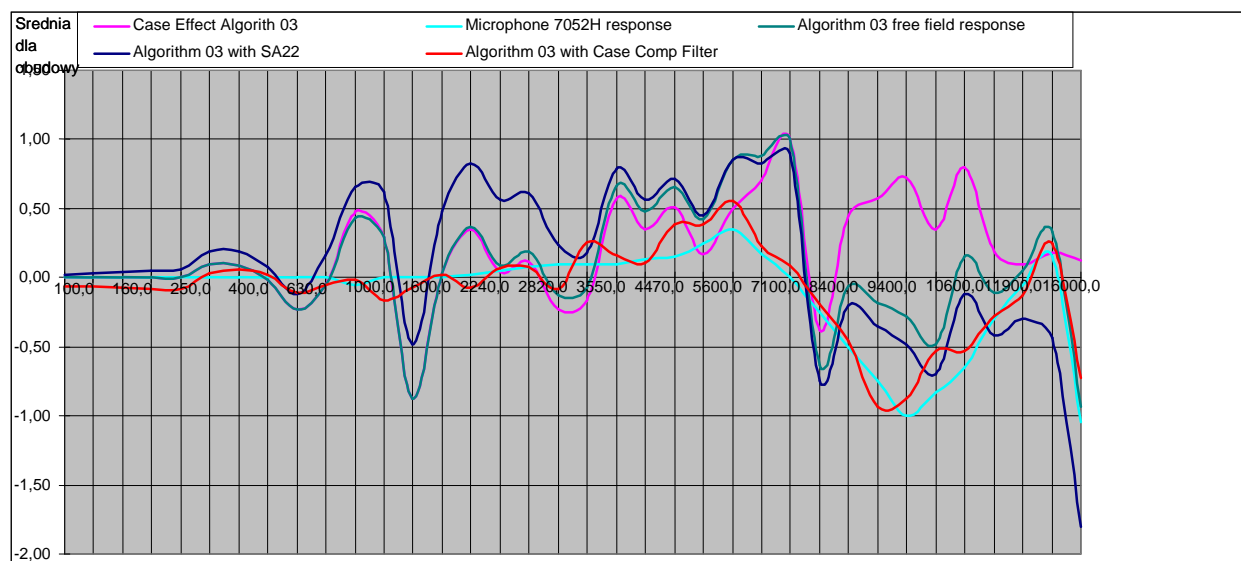
2500	0.0	0.0	0.0	0.0	0.0	0.0
3150	0.0	0.0	0.0	0.0	0.0	0.0
4000	0.0	0.0	0.0	0.0	0.0	0.0
5000	0.0	0.0	0.0	0.0	0.0	0.0
6300	0.0	0.0	0.0	0.0	0.0	0.0
8000	0.0	0.0	0.0	0.0	0.0	0.0
10000	0.0	0.0	0.0	0.1	0.0	0.0
12500	0.0	0.0	0.0	0.0	0.0	0.0
16000	0.0	0.0	0.0	0.0	0.0	0.0
20000	0.1	0.1	0.1	0.1	0.1	0.1



Effect of extension cable for the measurements with Z filter for  $U_{in}=1V_{RMS}$

### Free Field frequency response

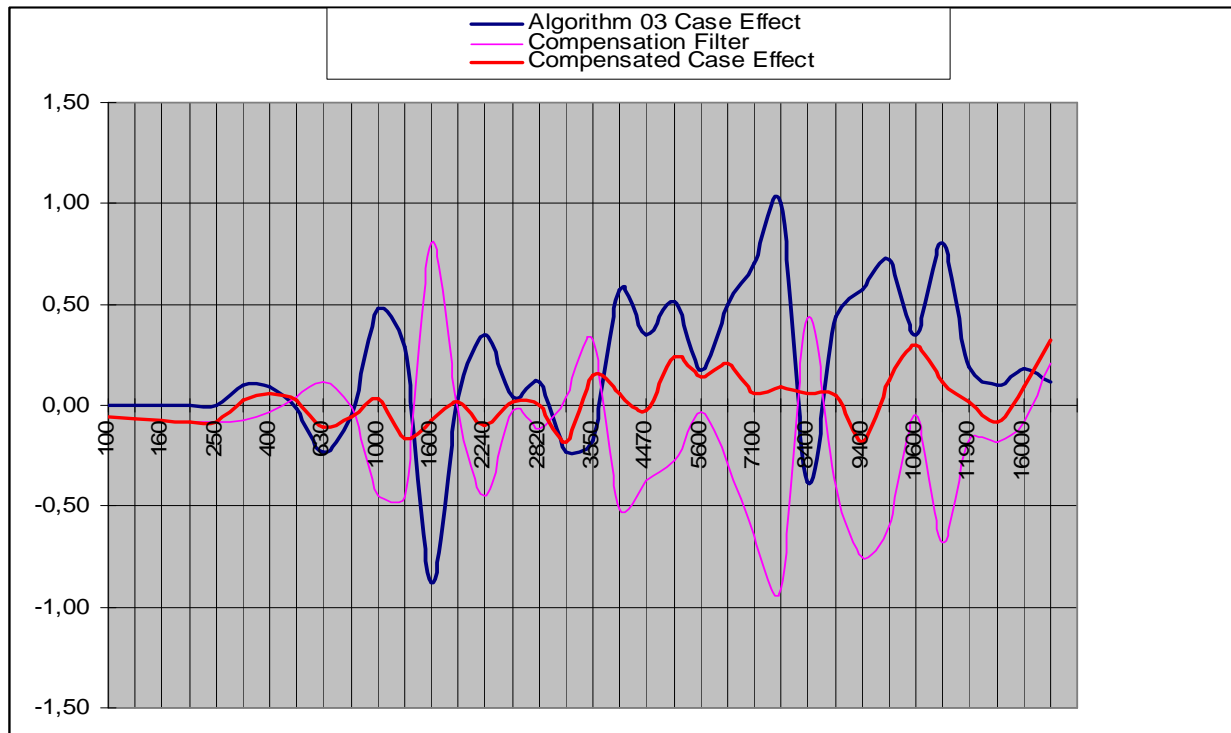
#### Effect of reflections and diffraction from the case of the SLM



Typical free field frequency response of G7 instrument

Table C.13. Effect of reflections and diffraction from the case of the SLM

f [Hz]	G7 frequency response (typical)	Microphone 7052H free field response (typical)	G7 case effect	G7 with SA 22 frequency response (typical)
100.0	0.0	0.00	0.00	0.00
125.0	0.0	0.00	0.00	0.00
160.0	0.0	0.00	0.00	0.00
200.0	0.0	0.00	0.00	0.00
250.0	0.0	0.00	0.00	0.10
315.0	0.1	0.00	0.10	0.20
400.0	0.1	0.00	0.09	0.20
500.0	0.0	0.00	-0.02	0.10
630.0	-0.2	0.00	-0.23	-0.10
800.0	-0.1	0.00	-0.05	0.20
1000.0	0.4	-0.05	0.48	0.70
1250.0	0.3	0.00	0.29	0.60
1600.0	-0.9	0.00	-0.88	-0.50
2000.0	0.0	0.00	0.03	0.50
2240.0	0.4	0.03	0.35	0.80
2500.0	0.1	0.05	0.04	0.60
2820.0	0.2	0.08	0.12	0.60
3150.0	-0.1	0.10	-0.23	0.20
3550.0	-0.1	0.10	-0.17	0.20
4000.0	0.7	0.10	0.57	0.80
4470.0	0.5	0.13	0.35	0.60
5000.0	0.7	0.15	0.51	0.70
5600.0	0.4	0.25	0.17	0.50
6300.0	0.8	0.35	0.50	0.80
7100.0	0.9	0.18	0.70	0.80
8000.0	1.0	0.00	1.00	0.90
8400.0	-0.6	-0.25	-0.38	-0.70
8900.0	-0.1	-0.50	0.44	-0.20
9400.0	-0.2	-0.75	0.57	-0.40
10000.0	-0.3	-1.00	0.72	-0.50
10600.0	-0.5	-0.83	0.35	-0.70
11200.0	0.1	-0.65	0.80	-0.10
11900.0	-0.1	-0.30	0.19	-0.40
12500.0	0.0	-0.05	0.10	-0.30
16000.0	0.3	0.15	0.18	-0.40
20000.0	-0.9	-1.05	0.12	-1.80



**Typical case effect of G7 instrument and compensation filters characteristics**

See “Case effect” and results after “Case compensation” on the Figure and the Table below.

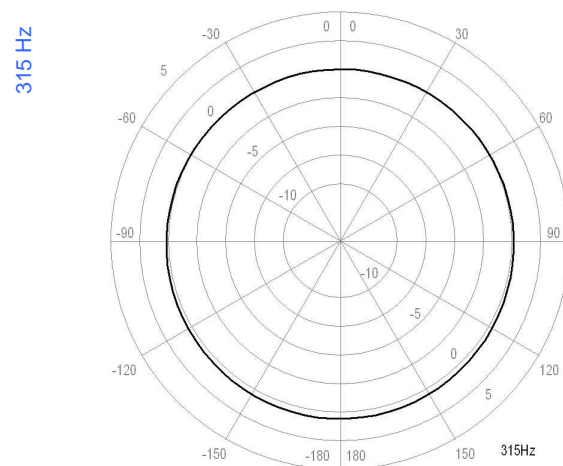
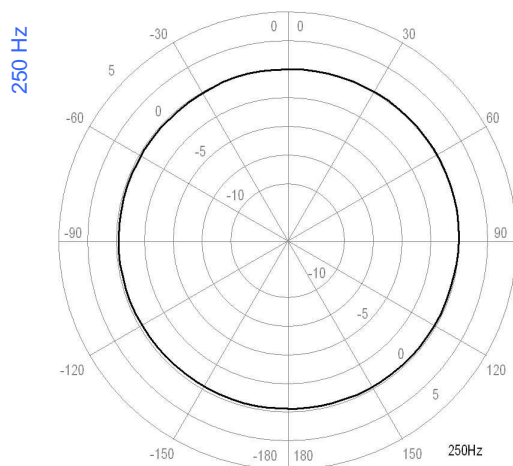
Table C.14. The effect of the windscreen and case effect of G7

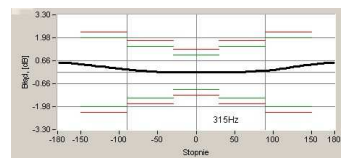
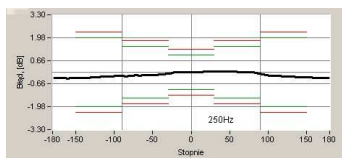
f [Hz]	Case effect [dB]	Case compensation filter [dB]	Case effect after compensation [dB]
100.0	0.00	-0.059532018	-0.06
125.0	0.00	-0.064265446	-0.06
160.0	0.00	-0.071586079	-0.07
200.0	0.00	-0.078788819	-0.08
250.0	0.00	-0.082444783	-0.08
315.0	0.10	-0.072904441	0.03
400.0	0.09	-0.033811826	0.06
500.0	-0.02	0.042657203	0.02
630.0	-0.23	0.119792113	-0.11
800.0	-0.05	-0.004424002	-0.05
1000.0	0.48	-0.445074651	0.03
1250.0	0.29	-0.459474889	-0.17
1600.0	-0.88	0.803966206	-0.08
2000.0	0.03	-0.013049722	0.02
2240.0	0.35	-0.444071285	-0.10
2500.0	0.04	-0.021245411	0.02

2820.0	0.12	-0.112923794	0.00
3150.0	-0.23	0.043943765	-0.19
3550.0	-0.17	0.322327216	0.15
4000.0	0.57	-0.512218726	0.06
4470.0	0.35	-0.375648693	-0.03
5000.0	0.51	-0.269436004	0.24
5600.0	0.17	-0.0301991	0.14
6300.0	0.50	-0.290948905	0.21
7100.0	0.70	-0.649880548	0.06
8000.0	1.00	-0.909905836	0.09
8400.0	-0.38	0.434172102	0.05
8900.0	0.44	-0.393991273	0.05
9400.0	0.57	-0.756209137	-0.19
10000.0	0.72	-0.59554601	0.12
10600.0	0.35	-0.050889768	0.30
11200.0	0.80	-0.681313089	0.12
11900.0	0.19	-0.171463618	0.02
12500.0	0.10	-0.179992382	-0.08
16000.0	0.18	-0.086878998	0.09
20000.0	0.12	0.203881982	0.32

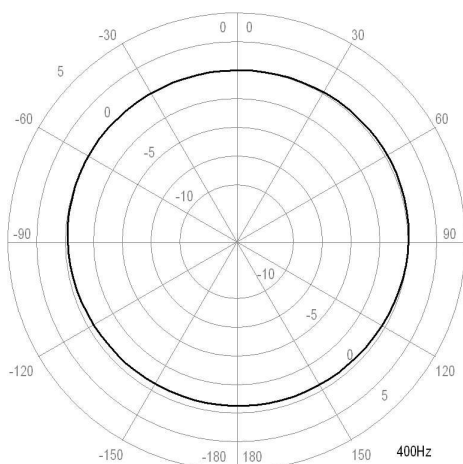
### Directional characteristics

Directional response for SLM Type **G7** with microphone type **ACO 7052H** and preamplifier type **SV 12L** for specified frequencies are presented below. The round charts show the directional characteristic and the charts below shows the errors and tolerance limits for particular angle.

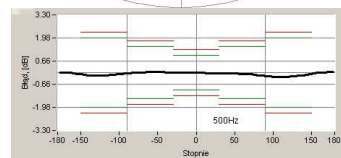
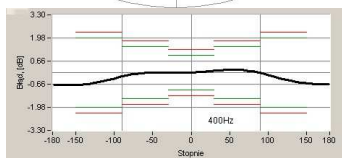
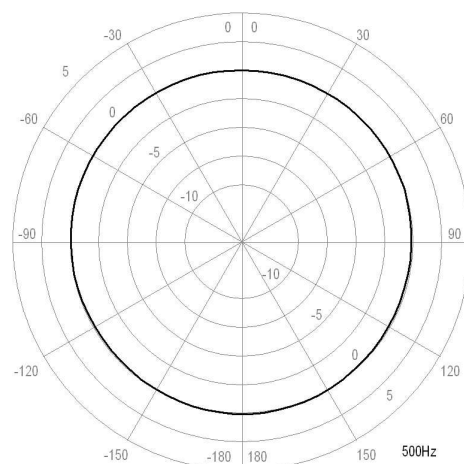




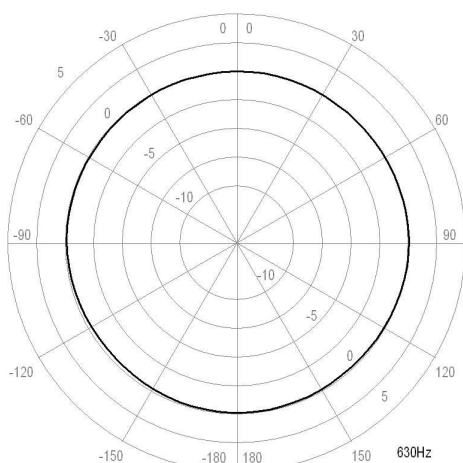
400 Hz



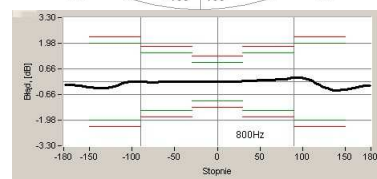
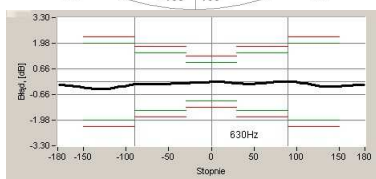
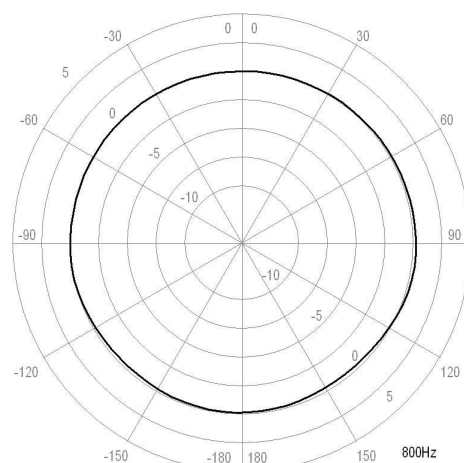
500 Hz



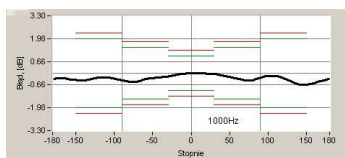
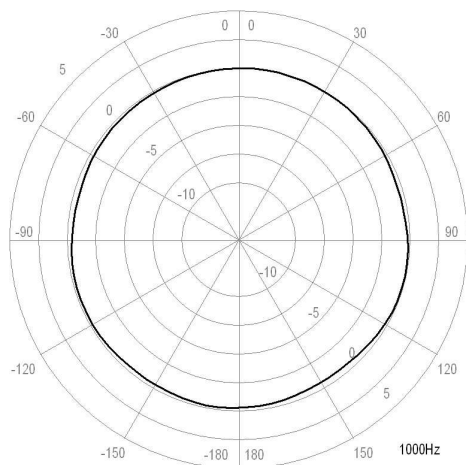
630 Hz



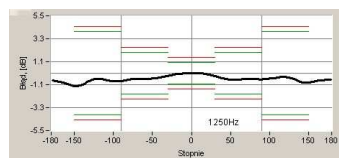
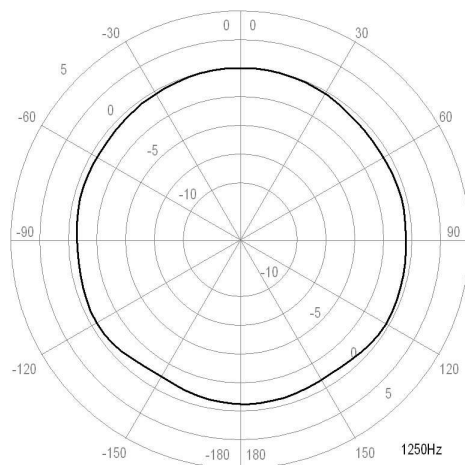
800 Hz



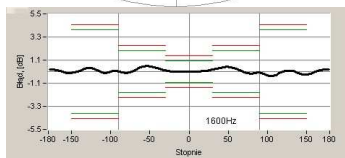
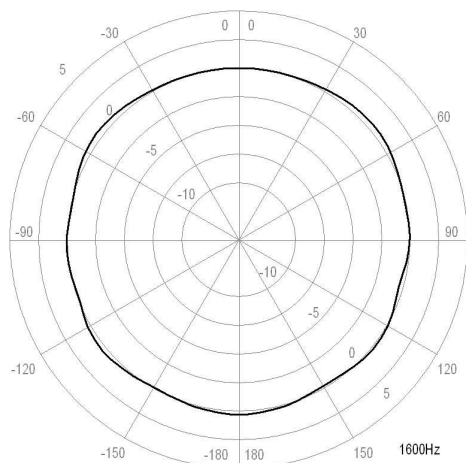
1000 Hz



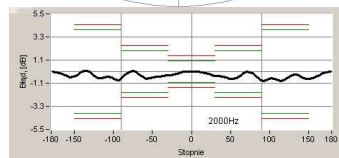
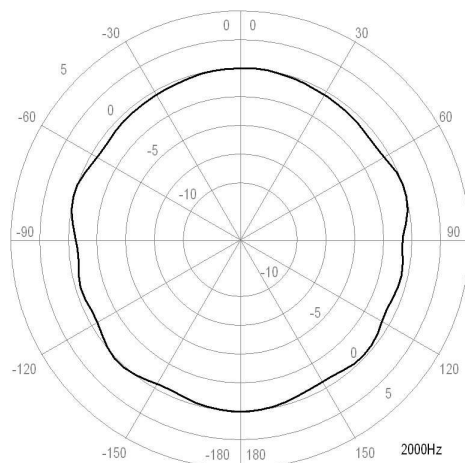
1250 Hz



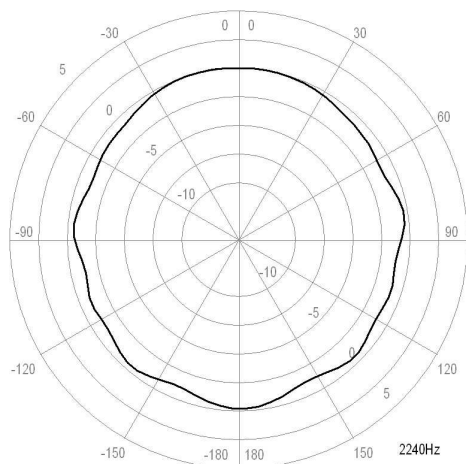
1600 Hz



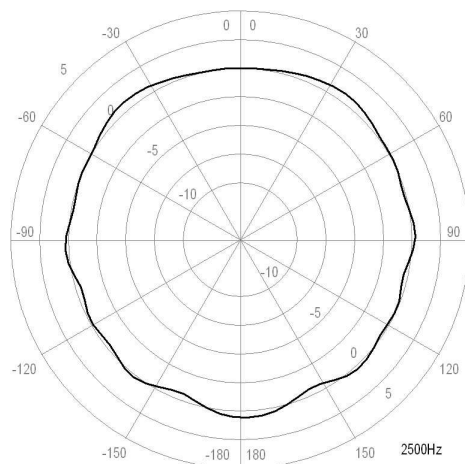
2000 Hz



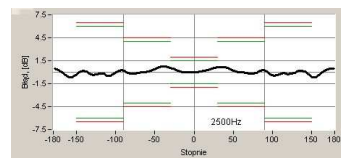
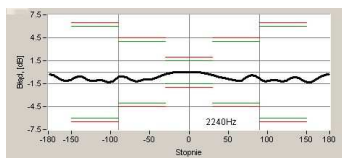
2240 Hz



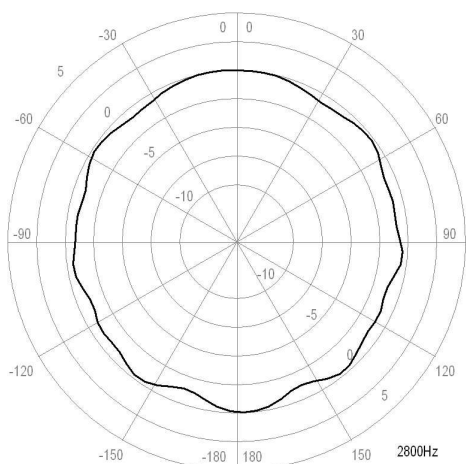
2500 Hz



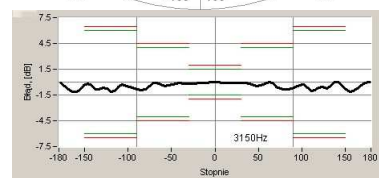
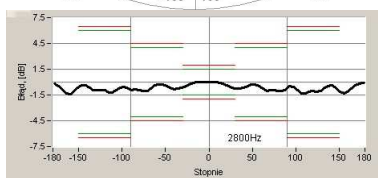
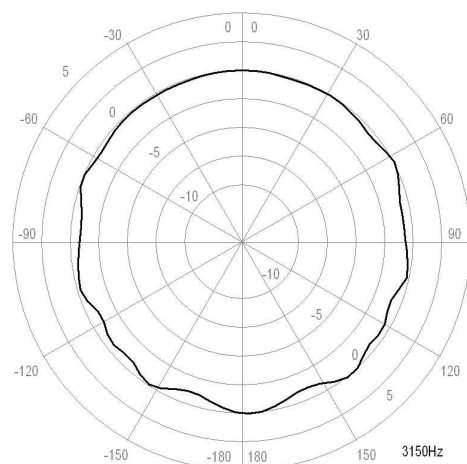




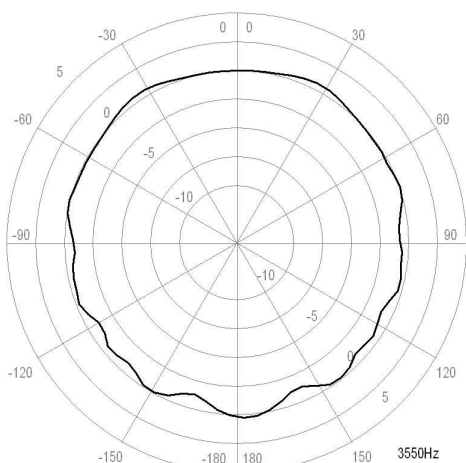
2800 Hz



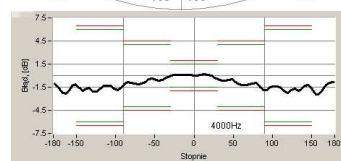
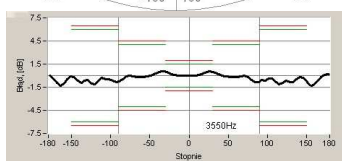
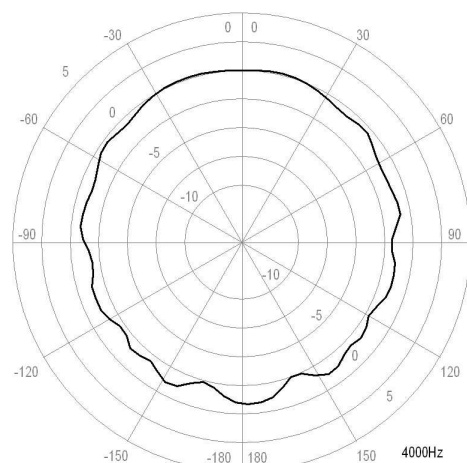
3150 Hz



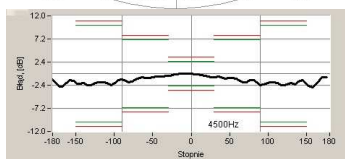
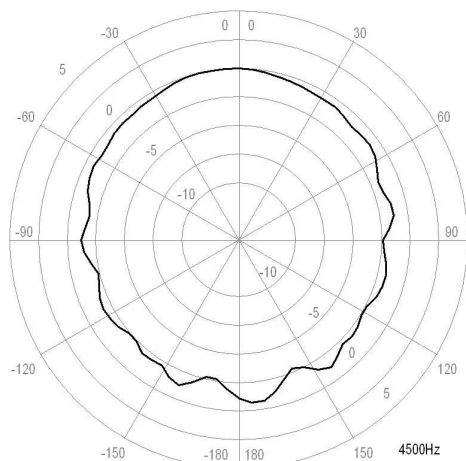
3550 Hz



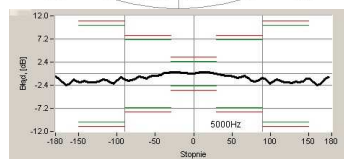
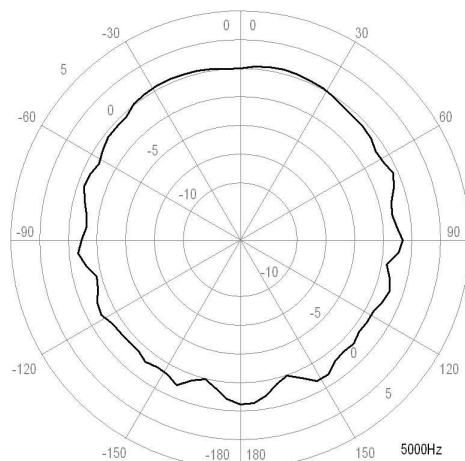
4000 Hz



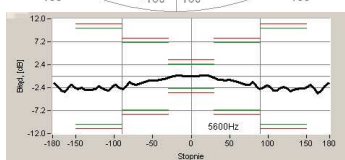
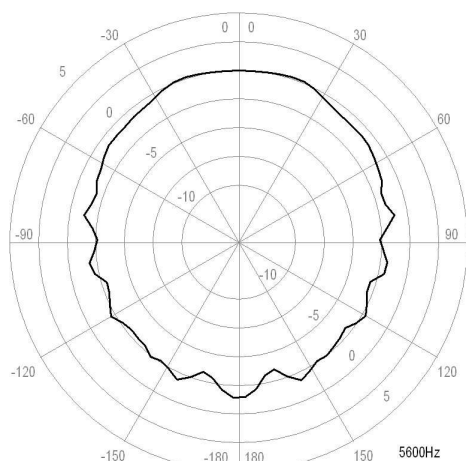
4500 Hz



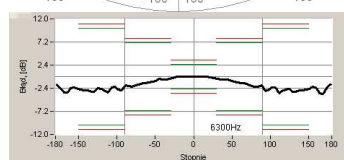
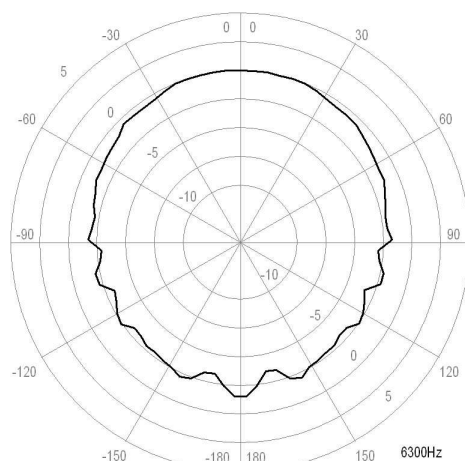
5000 Hz



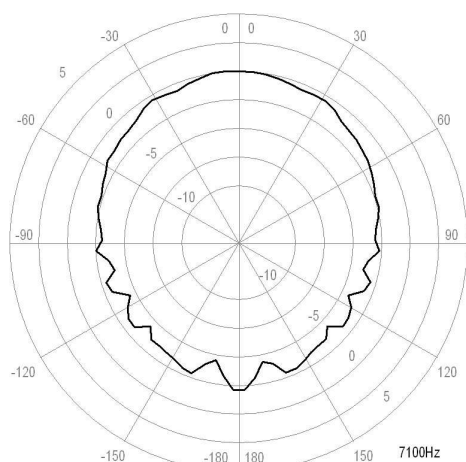
5600 Hz



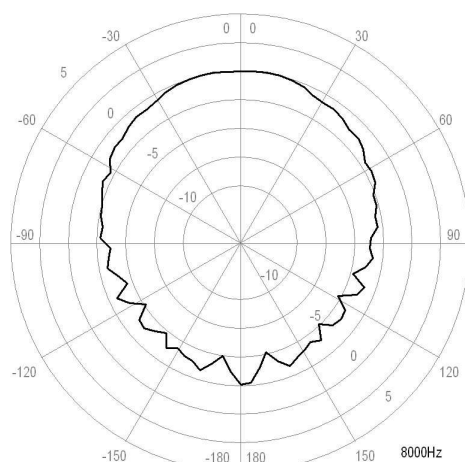
6300 Hz

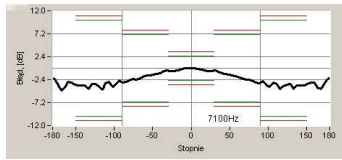


7100 Hz

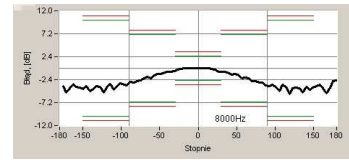
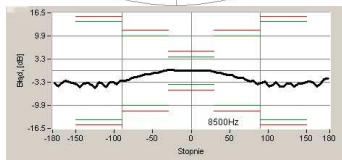
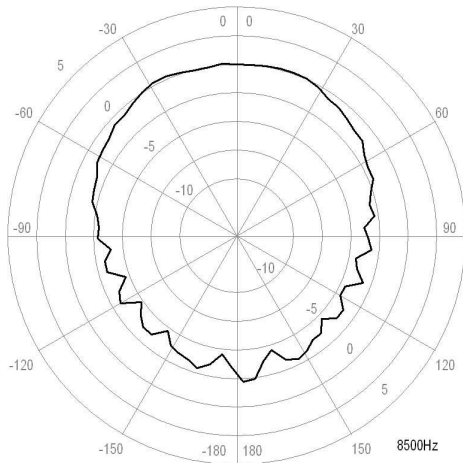


8000 Hz

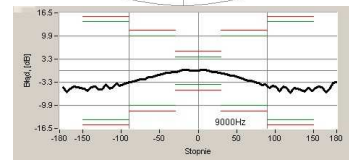
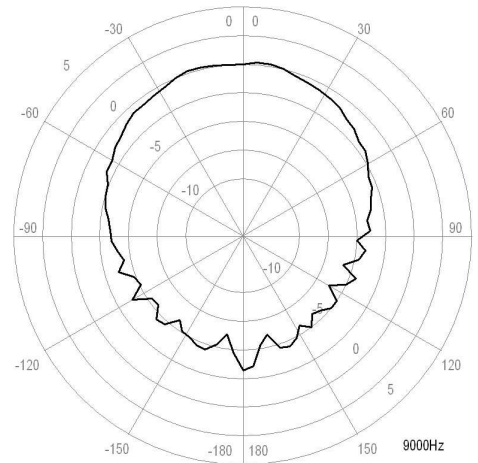




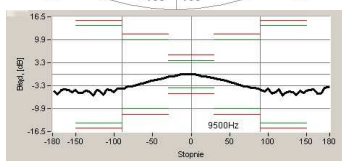
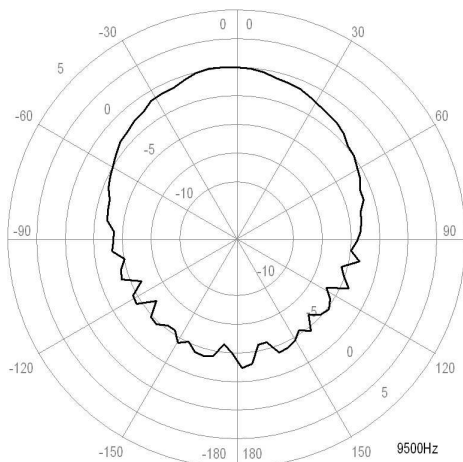
8500 Hz



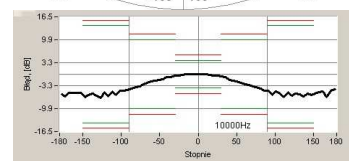
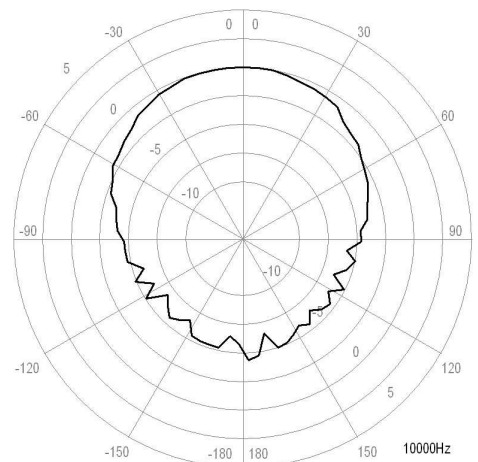
9000 Hz



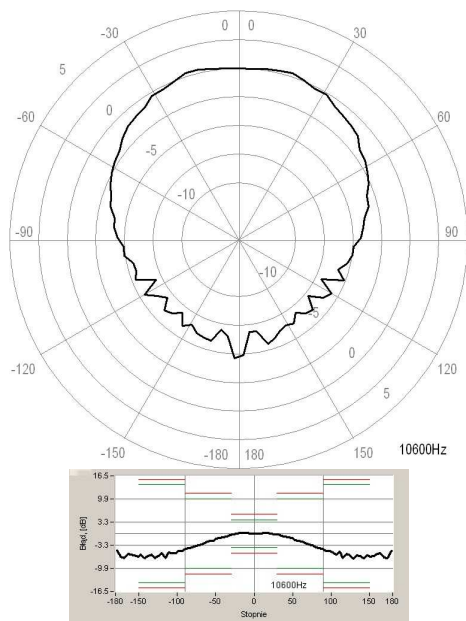
9500 Hz



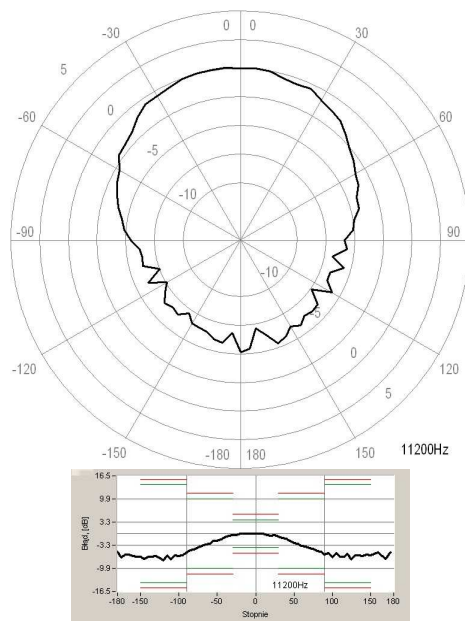
10000 Hz



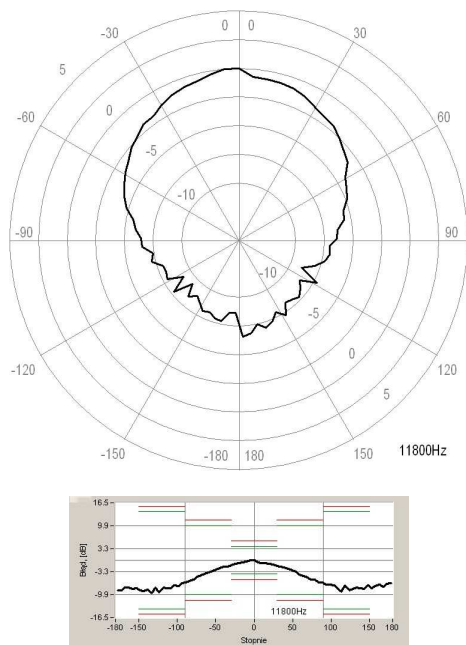
10600 Hz



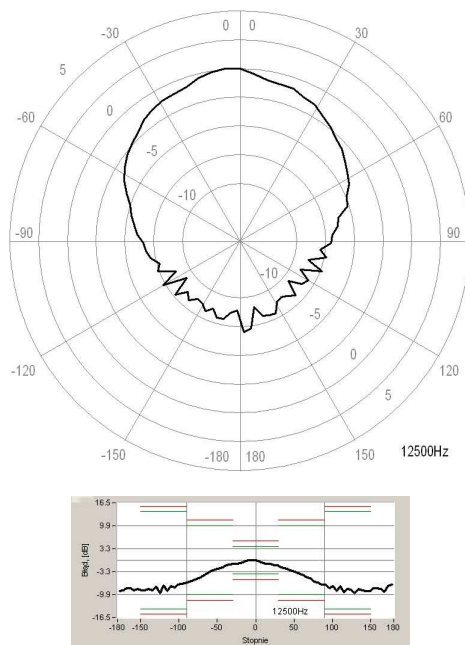
11200 Hz



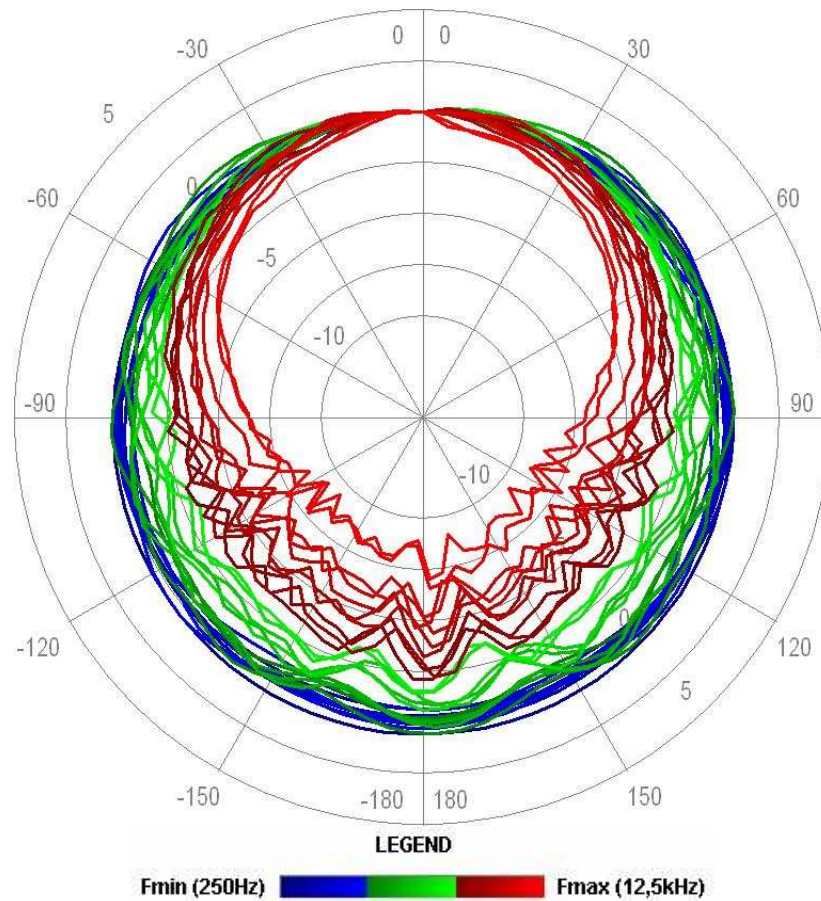
11800 Hz



12500 Hz



**G7 directional response with ACO 7052H and SV 12L for given frequencies**



Total directional characteristics of G7 with ACO 7052H microphone and SV 12L preamplifier

Table C.15. Directional response for G7, including microphone type ACO 7052H

Angle [°]	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45
f [Hz]	[dB]								
250	0.00	0.01	0.02	0.03	0.00	0.03	0.04	0.05	0.00
315	0.00	-0.01	0.00	-0.01	0.00	-0.01	0.00	-0.01	0.00
400	0.01	0.03	0.04	0.06	0.07	0.09	0.11	0.14	0.15
500	-0.01	-0.02	-0.03	0.00	-0.04	0.00	-0.04	-0.05	0.00
630	-0.01	0.00	-0.02	-0.04	-0.05	-0.07	-0.08	-0.11	0.00
800	0.00	0.00	0.00	0.00	0.01	0.02	0.03	0.05	0.06
1000	0.01	0.00	0.00	-0.01	-0.03	-0.04	-0.06	-0.11	-0.15
1250	0.01	0.00	-0.03	-0.07	-0.13	-0.20	-0.28	-0.47	-0.55
1600	0.01	0.02	0.03	0.04	0.08	0.13	0.20	0.36	0.42
2000	0.02	0.00	-0.08	-0.17	-0.24	-0.32	-0.39	-0.48	-0.56
2240	0.01	0.00	-0.03	-0.10	-0.18	-0.29	-0.42	-0.69	-0.79
2500	0.02	0.07	0.16	0.28	0.43	0.56	0.66	0.70	0.00
2800	-0.01	-0.04	-0.11	-0.26	-0.45	-0.64	-0.78	-0.79	0.00
3150	-0.01	-0.07	-0.13	-0.14	0.00	-0.10	0.00	-0.21	-0.34
3550	0.01	0.04	0.13	0.28	0.46	0.56	0.00	0.31	0.00
4000	0.03	0.10	0.15	0.00	-0.04	-0.24	-0.46	-0.69	0.00
4500	-0.09	-0.21	-0.34	-0.44	-0.54	-0.68	-0.71	0.00	-1.05

5000	0.19	0.31	0.34	0.00	0.14	0.00	-0.10	-0.30	-0.41
5600	-0.02	0.00	0.08	0.14	0.00	-0.11	-0.43	-0.82	-0.85
6300	-0.02	0.00	-0.07	0.00	-0.08	-0.25	-0.44	-0.59	-0.60
7100	-0.02	-0.08	-0.23	-0.44	-0.59	0.00	-0.50	-1.11	-1.26
8000	0.01	0.04	0.00	-0.11	-0.31	-0.69	-0.82	-0.98	-1.31
8500	-0.02	0.05	0.08	0.00	0.02	-0.22	-0.63	-0.70	-0.98
9000	0.21	0.00	0.00	-0.31	-0.47	-0.63	-0.80	-0.97	-1.37
9500	-0.07	-0.26	-0.55	-0.67	-0.77	-1.10	-1.34	-1.48	-1.67
10000	0.00	-0.02	-0.07	-0.23	-0.42	-0.50	-0.69	-0.81	-1.55
10600	-0.01	0.09	0.20	0.28	0.00	-0.21	-0.22	-0.85	-1.02
11200	0.05	0.00	-0.40	-0.54	0.00	-0.92	-1.17	-1.43	-2.04
11800	-0.68	-0.73	-0.79	-0.94	-1.21	-1.64	-1.87	-2.03	-2.51
12500	-0.43	-0.82	-0.95	-0.98	-1.37	-1.51	-1.99	-2.35	-2.78

Angle [°]	45-50	50-55	55-60	60-65	65-70	70-75	75-80	80-85	85-90
f [Hz]	[dB]								
250	0.04	0.00	0.04	0.00	0.01	0.00	-0.02	-0.04	-0.07
315	0.00	0.01	0.00	0.02	0.03	0.04	0.07	0.08	0.00
400	0.16	0.00	0.16	0.00	0.15	0.00	0.10	0.00	-0.02
500	-0.05	-0.06	-0.07	-0.08	-0.09	-0.10	-0.13	-0.15	-0.18
630	-0.11	0.00	-0.09	0.00	-0.06	0.00	-0.02	0.00	0.01
800	0.07	0.08	0.09	0.10	0.00	0.11	0.14	0.17	0.19
1000	-0.20	-0.23	-0.28	-0.33	-0.38	-0.41	-0.42	0.00	-0.28
1250	-0.60	-0.63	0.00	-0.60	0.00	-0.53	-0.54	-0.57	-0.59
1600	0.46	0.00	0.34	0.00	0.08	0.00	-0.18	0.00	-0.09
2000	-0.66	-0.71	0.00	-0.43	0.00	-0.03	-0.23	-0.54	-0.83
2240	-0.85	-0.91	-1.05	-1.16	0.00	-0.88	-0.42	-0.46	-0.73
2500	0.27	0.00	0.02	0.03	-0.05	-0.19	-0.23	0.00	0.25
2800	-0.31	0.00	-0.44	-0.76	-1.01	0.00	-0.99	-1.02	0.00
3150	-0.46	0.00	-0.18	0.00	-0.14	-0.52	-0.82	0.00	-0.73
3550	-0.11	-0.15	0.00	-0.23	0.00	0.00	-0.57	-0.85	-0.87
4000	-0.45	-0.81	-1.14	-1.26	0.00	-1.13	-0.98	-1.49	-1.91
4500	0.00	-0.86	-1.07	-1.48	-1.82	0.00	-1.37	0.00	-2.41
5000	-0.46	-0.60	-0.93	0.00	-0.48	-0.85	-1.44	-1.59	0.00
5600	0.00	-0.90	-1.08	-1.28	-1.43	-1.85	-1.21	-1.98	-2.69
6300	-0.90	-1.07	-1.25	-1.36	-1.38	-1.71	-2.16	-2.17	0.00
7100	-1.37	-1.53	-1.65	-1.89	-2.16	-2.43	-2.65	-2.98	-3.10
8000	0.00	-1.53	-2.05	0.00	-2.14	-2.71	-3.04	0.00	-3.64
8500	-1.24	-1.28	-1.81	-2.08	-2.10	-2.71	-3.12	0.00	-3.86
9000	-1.54	-1.95	-2.43	-2.85	-2.94	-3.40	-3.58	-4.05	0.00
9500	-1.91	-2.48	-2.79	-3.02	-3.42	0.00	-3.94	-4.02	-4.16
10000	-1.84	-1.99	-2.50	-2.81	-3.05	-3.49	-3.80	-4.03	-4.72
10600	-1.22	-1.84	-1.97	-2.32	-2.67	-3.18	-3.87	-4.08	-4.37
11200	-2.61	-2.94	-3.42	-3.67	-4.22	-4.31	-4.92	-5.17	-5.95
11800	-2.95	-3.31	-4.21	-4.57	-4.89	-5.53	-5.65	-6.34	-6.43
12500	-3.05	-3.54	-3.93	-4.28	-4.96	-5.19	-6.24	-6.40	-6.96



Angle [°]	90-95	95-100	100-105	105-110	110-115	115-120	120-125	125-130	130-135
f [Hz]	[dB]								
250	-0.11	-0.15	-0.20	-0.21	0.00	-0.24	-0.25	0.00	-0.25
315	0.10	0.12	0.14	0.17	0.20	0.25	0.28	0.31	0.34
400	-0.06	-0.11	-0.17	-0.22	-0.27	-0.38	-0.42	-0.46	-0.50
500	-0.20	-0.21	-0.23	-0.24	0.00	-0.24	0.00	-0.20	0.00
630	0.00	-0.01	-0.04	-0.07	-0.10	-0.17	-0.20	-0.23	-0.24
800	0.21	0.00	0.17	0.00	0.03	-0.17	-0.27	-0.35	-0.40
1000	0.00	-0.18	0.00	-0.16	-0.18	-0.28	-0.36	-0.45	-0.55
1250	0.00	-0.54	0.00	-0.45	0.00	-0.36	-0.40	-0.50	-0.65
1600	-0.14	-0.27	-0.40	-0.43	0.00	-0.15	0.00	0.10	0.00
2000	-0.89	0.00	-0.63	-0.67	-0.81	-0.89	0.00	-0.34	0.00
2240	-1.05	-1.22	0.00	-1.01	0.00	-1.18	0.00	-0.85	0.00
2500	0.00	-0.24	-0.48	0.00	-0.17	-0.24	0.00	-0.06	0.16
2800	-0.51	-0.58	-0.95	-1.27	-1.30	-1.07	-1.13	0.00	-0.70
3150	0.00	-0.39	0.00	-0.66	-1.02	-0.63	0.00	-0.72	0.00
3550	0.00	-0.63	0.00	-0.42	-0.83	-1.14	0.00	-0.83	-0.86
4000	0.00	-1.53	0.00	-1.44	-1.59	-2.22	0.00	-1.69	-1.93
4500	0.00	-2.02	0.00	-1.86	-2.01	-2.39	-2.47	0.00	-2.18
5000	-1.17	-2.10	0.00	-1.24	-1.52	-1.84	-1.85	-1.92	0.00
5600	0.00	-1.94	-2.04	-3.03	0.00	-2.62	0.00	-3.10	0.00
6300	-2.97	0.00	-2.23	-2.28	-3.41	-2.66	0.00	-3.15	-3.18
7100	0.00	-3.57	-3.89	0.00	-3.33	-4.42	0.00	-3.37	-4.38
8000	-3.71	0.00	-3.90	-4.82	0.00	-5.33	0.00	-4.01	-4.22
8500	0.00	-3.18	-4.46	0.00	-3.24	-4.58	0.00	-3.73	-4.63
9000	-5.02	0.00	-4.68	-5.89	0.00	-6.36	0.00	-5.07	-5.62
9500	-4.50	-4.97	-5.55	0.00	-4.34	-6.09	0.00	-4.89	-5.17
10000	0.00	-5.89	0.00	-5.52	-6.50	0.00	-6.27	0.00	-5.77
10600	-4.99	-5.01	-5.33	-5.99	0.00	-7.05	0.00	-7.21	0.00
11200	0.00	-6.86	0.00	-6.68	0.00	-5.82	-7.44	0.00	-6.13
11800	-7.05	00.0	-7.30	-8.04	-9.05	0.00	-8.63	0.00	-7.78
12500	-7.09	-7.99	0.00	-8.83	0.00	-9.22	0.00	-9.51	0.00

Angle [°]	135-140	140-145	145-150	150-155	155-160	160-165	165-170	170-175	175-180
f [Hz]	[dB]								
250	-0.27	-0.29	0.00	-0.28	-0.31	-0.32	0.00	-0.32	-0.33
315	0.37	0.40	0.42	0.45	0.50	0.51	0.52	0.53	0.54
400	-0.54	-0.57	-0.59	-0.61	-0.64	-0.65	-0.66	-0.67	-0.68
500	-0.16	0.00	-0.07	0.00	-0.01	0.01	0.02	0.03	0.00
630	-0.25	0.00	-0.25	0.00	-0.22	0.00	-0.18	0.00	-0.16
800	-0.44	0.00	-0.43	0.00	-0.37	0.00	-0.25	0.00	-0.20
1000	-0.62	-0.65	-0.66	0.00	-0.61	0.00	-0.44	0.00	-0.35
1250	-0.79	-0.88	-0.92	0.00	-0.85	0.00	-0.67	0.00	-0.65
1600	-0.08	-0.21	-0.28	0.00	-0.18	0.00	0.13	0.20	0.23
2000	-0.36	-0.54	-0.68	-0.71	-0.48	0.00	-0.17	0.00	0.00
2240	-0.68	-0.86	-1.12	-1.31	-1.11	0.00	-0.56	0.00	-0.26

2500	0.23	0.00	-0.32	-0.63	-0.65	0.00	0.28	0.45	0.51
2800	0.00	-0.40	-0.67	-1.09	-1.32	0.00	-0.39	0.00	-0.09
3150	-0.03	0.00	-0.41	-0.85	-1.08	0.00	-0.35	0.00	0.00
3550	0.00	-0.18	-0.29	-0.80	-1.31	0.00	-0.19	0.00	0.19
4000	0.00	-1.31	0.00	-1.77	-2.48	0.00	-1.25	0.00	-0.89
4500	0.00	-1.29	-1.73	-2.55	-2.85	0.00	-1.35	0.00	-1.15
5000	-1.74	0.00	-0.98	0.00	-1.85	-2.47	0.00	-1.23	0.00
5600	-2.71	0.00	-2.61	0.00	-2.57	-3.54	0.00	-2.15	0.00
6300	0.00	-2.87	0.00	-2.60	-2.37	-3.44	-3.56	0.00	-1.59
7100	0.00	-3.66	0.00	-3.23	-2.96	-4.06	-4.42	0.00	-2.13
8000	-5.13	-4.45	0.00	-3.81	0.00	-4.16	-5.21	0.00	-2.76
8500	0.00	-3.79	0.00	-3.00	-3.37	-4.62	0.00	-2.41	0.00
9000	-5.88	0.00	-5.72	0.00	-4.50	-4.74	-6.15	0.00	-3.58
9500	-5.92	0.00	-5.38	-4.50	0.00	-5.64	0.00	-4.01	0.00
10000	-6.45	0.00	-5.99	0.00	-5.13	0.00	-6.54	0.00	-4.41
10600	-6.32	-6.97	0.00	-6.50	-5.84	0.00	-6.88	-6.92	0.00
11200	-6.34	0.00	-6.27	0.00	-5.42	-6.42	-7.18	0.00	-5.19
11800	-8.10	-8.23	0.00	-8.00	0.00	-7.01	-7.53	0.00	-6.61
12500	-8.70	-8.93	0.00	-7.99	-8.07	-8.19	-9.16	0.00	-7.07

Angle [°]	180-185	185-190	190-195	195-200	200-205	205-210	210-215	215-220	220-225
f [Hz]	[dB]								
250	-0.35	0.00	-0.34	-0.36	0.00	-0.34	0.00	-0.34	0.00
315	0.00	0.54	0.00	0.52	0.00	0.47	0.00	0.42	0.00
400	-0.69	-0.70	0.00	-0.71	0.00	-0.71	0.00	-0.69	0.00
500	0.02	0.00	0.00	-0.02	-0.05	-0.07	-0.10	-0.13	-0.16
630	-0.17	0.00	-0.19	-0.23	-0.26	-0.29	-0.32	-0.35	-0.37
800	0.00	-0.17	-0.18	-0.21	-0.24	-0.27	-0.30	-0.33	-0.34
1000	0.00	-0.30	0.00	-0.33	-0.36	-0.39	-0.42	0.00	-0.41
1250	-0.68	-0.74	-0.82	-1.03	-1.13	-1.21	-1.22	0.00	-1.01
1600	0.00	0.20	0.00	0.05	-0.12	-0.14	0.00	0.03	0.16
2000	0.00	-0.05	-0.16	-0.44	-0.54	0.00	-0.33	0.00	0.09
2240	-0.28	-0.42	-0.65	-1.12	-1.17	0.00	-0.77	0.00	-0.53
2500	0.00	0.27	0.00	-0.65	0.00	-0.35	0.00	0.18	0.00
2800	-0.20	-0.48	-0.89	-1.40	0.00	-0.70	0.00	-0.37	-0.65
3150	-0.13	-0.43	-0.81	-1.17	0.00	-0.42	0.00	-0.41	-0.86
3550	0.00	-0.41	-0.97	-1.33	0.00	-0.14	-0.23	-0.69	-0.94
4000	-1.06	-1.51	-2.13	-2.39	0.00	-1.13	-1.55	-1.96	0.00
4500	-1.92	-2.70	-2.71	0.00	-1.28	-1.53	-2.16	0.00	-2.38
5000	-1.06	-1.86	-2.44	0.00	-1.13	-1.64	-1.74	0.00	-1.87
5600	-1.48	-2.07	-3.00	-3.33	0.00	-2.40	-2.65	0.00	-2.80
6300	0.00	-2.40	-3.37	-2.39	0.00	-2.55	-2.68	-2.88	0.00
7100	-2.14	-3.30	-4.59	-2.89	-3.04	-3.40	-3.53	-3.63	0.00
8000	-3.76	-5.03	0.00	-3.36	-3.87	-4.00	-4.33	-4.82	0.00
8500	-3.55	-4.59	0.00	-2.97	-3.36	-3.59	-3.85	-4.76	0.00
9000	-4.77	-6.27	0.00	-4.54	-4.65	-5.02	-5.11	-5.80	0.00
9500	-4.99	-5.77	0.00	-4.38	-4.48	-5.08	-5.39	0.00	-4.75



10000	-5.87	-6.41	0.00	-5.30	-5.34	-5.42	-6.53	0.00	-5.62
10600	-4.69	-6.50	-7.01	-5.96	-6.09	-6.53	0.00	-6.97	0.00
11200	-6.82	0.00	-6.05	-6.45	-6.57	-6.59	-7.19	0.00	-6.68
11800	-8.70	0.00	-7.80	-7.90	-8.26	0.00	-8.59	-8.93	0.00
12500	-8.96	0.00	-8.10	0.00	-8.65	0.00	-8.69	-8.75	0.00

Angle [°]	225-230	230-235	235-240	240-245	245-250	250-255	255-260	260-265	265-270
f [Hz]	[dB]								
250	-0.31	0.00	-0.30	0.00	-0.24	0.00	-0.24	0.00	-0.21
315	0.38	0.00	0.33	0.00	0.26	0.00	0.22	0.00	0.18
400	-0.65	0.00	-0.59	0.00	-0.46	0.00	-0.36	0.00	-0.26
500	-0.17	0.00	-0.17	0.00	-0.14	0.00	-0.09	0.00	-0.05
630	-0.38	0.00	-0.38	0.00	-0.30	0.00	-0.23	0.00	-0.16
800	-0.35	0.00	-0.29	0.00	-0.10	0.00	-0.01	0.01	0.00
1000	0.00	-0.33	-0.25	0.00	-0.23	-0.24	-0.27	-0.31	-0.36
1250	0.00	-0.68	-0.54	-0.56	-0.62	-0.68	-0.73	-0.76	-0.77
1600	0.28	0.34	0.23	0.00	-0.09	-0.14	0.00	0.04	0.07
2000	0.00	-0.09	-0.61	-0.63	0.00	-0.46	-0.57	-0.76	-0.80
2240	-0.72	-0.99	-1.17	0.00	-1.03	-1.22	-1.34	0.00	-0.88
2500	-0.20	-0.36	-0.20	-0.22	-0.45	-0.50	0.00	0.10	0.27
2800	-0.91	-0.98	-0.98	-1.23	0.00	-0.95	0.00	-0.54	-0.77
3150	-0.89	0.00	-1.08	0.00	-0.58	0.00	-0.44	-0.59	-0.74
3550	0.00	-0.60	-1.12	0.00	-0.31	-0.45	-0.50	-0.61	-0.86
4000	-1.59	-2.05	-2.09	0.00	-1.34	-1.35	-1.70	-1.85	0.00
4500	-2.43	0.00	-1.85	0.00	-1.85	-2.17	-2.40	0.00	-1.42
5000	0.00	-1.78	0.00	-1.23	-1.39	-1.87	-2.06	0.00	-0.80
5600	-2.86	-2.92	-2.10	-2.49	-2.88	-2.97	0.00	-1.81	-2.33
6300	-3.11	-3.13	-2.57	-3.01	-3.28	0.00	-2.08	-2.70	-2.88
7100	-4.38	0.00	-3.77	-4.45	0.00	-2.92	-3.90	0.00	-2.53
8000	-3.77	-3.90	-5.16	0.00	-3.23	-4.54	0.00	-3.44	-3.67
8500	-3.57	-4.12	-4.85	0.00	-4.65	0.00	-3.27	-3.91	0.00
9000	-4.50	-5.42	-3.84	-5.12	0.00	-3.71	-4.39	0.00	-3.50
9500	-4.86	-6.13	0.00	-4.65	-5.89	0.00	-5.06	0.00	-4.19
10000	-6.20	-6.83	0.00	-6.30	0.00	-5.97	0.00	-4.68	0.00
10600	-6.03	-6.94	-5.49	-6.97	0.00	-5.63	0.00	-4.88	-4.93
11200	0.00	-6.99	-7.58	0.00	-7.52	0.00	-6.32	0.00	-5.46
11800	-9.47	0.00	-9.23	0.00	-8.07	0.00	-7.15	-7.42	0.00
12500	-8.69	0.00	-9.39	0.00	-7.38	-7.77	0.00	-6.78	0.00

Angle [°]	270-275	275-280	280-285	285-290	290-295	295-300	300-305	305-310	310-315
f [Hz]	[dB]								
250	-0.22	-0.23	0.00	-0.18	-0.19	0.00	-0.16	0.00	-0.15
315	0.00	0.14	0.00	0.09	0.00	0.06	0.00	0.03	0.00
400	0.00	-0.17	0.00	-0.07	0.00	-0.03	0.00	-0.01	0.00
500	0.00	-0.02	0.00	0.01	0.02	0.03	0.00	0.03	0.00
630	0.00	-0.12	0.00	-0.11	0.00	-0.11	0.00	-0.11	0.00

800	0.00	-0.03	0.00	-0.03	0.00	-0.01	0.00	0.00	0.00
1000	-0.42	-0.50	-0.51	0.00	-0.45	0.00	-0.33	0.00	-0.27
1250	0.00	-0.69	0.00	-0.54	-0.55	-0.57	-0.58	0.00	-0.51
1600	0.00	-0.11	0.00	0.08	0.24	0.39	0.49	0.53	0.00
2000	0.00	-0.30	0.00	-0.02	-0.25	-0.51	-0.66	0.00	-0.55
2240	0.00	-0.68	-0.92	-1.14	-1.19	0.00	-0.97	0.00	-0.90
2500	0.00	-0.20	0.00	-0.06	0.00	-0.01	0.05	0.26	0.50
2800	-0.91	-0.92	-1.05	0.00	-0.74	0.00	-0.26	-0.30	-0.46
3150	-0.87	-0.92	0.00	-0.13	0.00	-0.32	-0.44	0.00	-0.26
3550	0.00	-0.43	0.00	-0.12	-0.16	0.00	-0.16	0.00	0.02
4000	-1.12	-0.90	-1.01	-1.17	0.00	-0.80	0.00	-0.35	-0.54
4500	-1.56	-1.81	0.00	-1.13	0.00	-0.77	-0.90	0.00	-0.68
5000	-1.52	0.00	-0.98	0.00	-0.71	-0.98	0.00	-0.40	0.00
5600	-2.64	-1.27	-1.67	-1.85	0.00	-1.36	0.00	-0.84	0.00
6300	0.00	-2.14	0.00	-1.64	0.00	-1.35	0.00	-1.10	0.00
7100	-3.07	-2.57	0.00	-2.33	0.00	-1.87	0.00	-1.49	0.00
8000	0.00	-2.94	0.00	-2.49	0.00	-2.09	0.00	-1.22	-1.26
8500	-2.93	0.00	-2.03	0.00	-1.75	0.00	-1.08	0.00	-0.60
9000	0.00	-3.18	0.00	-2.49	0.00	-1.84	0.00	-1.25	0.00
9500	-4.22	0.00	-3.46	0.00	-2.91	0.00	-2.41	-1.77	0.00
10000	-4.03	0.00	-3.58	0.00	-2.57	0.00	-1.90	0.00	-1.35
10600	0.00	-4.06	0.00	-3.21	0.00	-2.46	0.00	-1.97	0.00
11200	0.00	-4.51	0.00	-3.56	0.00	-2.81	0.00	-1.96	0.00
11800	-6.44	0.00	-5.60	0.00	-4.28	0.00	-3.45	0.00	-2.65
12500	-6.09	0.00	-5.30	0.00	-4.33	0.00	-3.12	0.00	-2.39

Angle [°]	315-320	320-325	325-330	330-335	335-340	340-345	345-350	350-355	355-360
f [Hz]	[dB]								
250	-0.14	0.00	-0.10	0.00	-0.01	0.00	0.01	0.00	0.00
315	0.01	0.00	-0.01	-0.02	0.00	0.01	0.00	-0.01	0.00
400	-0.01	0.00	-0.02	0.00	-0.02	0.00	-0.02	-0.01	0.01
500	0.03	0.00	0.02	0.00	0.01	0.00	0.01	0.00	-0.01
630	-0.10	0.00	-0.08	0.00	-0.06	0.00	-0.06	-0.05	-0.01
800	0.01	0.00	0.01	0.00	0.01	0.00	-0.01	-0.02	0.00
1000	-0.23	0.00	-0.19	0.00	-0.12	0.00	-0.06	-0.01	0.01
1250	-0.40	0.00	-0.28	0.00	-0.16	0.00	-0.04	0.01	0.01
1600	0.44	0.00	0.14	0.00	0.03	0.00	0.00	0.02	0.01
2000	-0.45	0.00	-0.37	0.00	-0.28	0.00	-0.09	0.00	0.02
2240	-0.68	0.00	-0.31	0.00	-0.06	0.00	0.03	0.04	0.01
2500	0.75	0.00	0.59	0.00	0.27	0.00	0.04	0.01	0.02
2800	-0.80	0.00	-0.65	0.00	-0.26	0.00	-0.04	0.01	-0.01
3150	-0.13	-0.15	-0.17	-0.19	0.00	-0.14	0.00	-0.05	-0.01
3550	0.39	0.54	0.56	0.00	0.21	0.00	0.01	-0.01	0.01
4000	-0.65	0.00	-0.06	0.00	0.10	0.14	0.00	0.08	0.03
4500	0.00	-0.53	0.00	-0.38	0.00	-0.09	0.00	-0.04	-0.09
5000	-0.34	0.00	0.21	0.29	0.35	0.00	0.22	0.00	0.19
5600	-0.84	0.00	-0.48	0.00	0.05	0.12	0.00	0.03	-0.02

6300	-0.54	-0.57	0.00	-0.27	0.00	-0.02	0.00	0.04	-0.02
7100	-1.23	0.00	-0.41	-0.57	-0.65	0.00	-0.24	0.05	-0.02
8000	0.00	-0.80	0.00	-0.32	0.00	-0.03	0.00	0.04	0.01
8500	0.00	-0.30	0.00	0.23	0.24	0.00	-0.08	0.06	-0.02
9000	-0.63	0.00	-0.49	0.00	-0.04	0.20	0.00	0.06	0.21
9500	-1.37	0.00	-0.80	0.00	-0.69	0.00	-0.09	0.04	-0.07
10000	0.00	-0.73	0.00	-0.32	0.00	-0.06	0.01	0.00	0.00
10600	-1.14	0.00	-0.32	0.00	-0.08	0.27	0.00	0.13	-0.01
11200	-1.02	0.00	-0.50	0.00	-0.06	0.00	0.08	0.00	0.05
11800	0.00	-1.87	0.00	-1.41	0.00	-0.81	0.00	-0.33	-0.68
12500	0.00	-1.54	0.00	-1.09	0.00	-0.84	0.00	-0.1	-0.43

## C.2. Specification of G7 as 1/1 OCTAVE, 1/3 OCTAVE and FFT sound analyser

The **G7** instrument as **1/1 OCTAVE**, **1/3 OCTAVE** or **FFT** sound analyser conforms to the to he Type 1 of the international standards IEC 61672 sound level meters and the IEC 61260 standard for the pass band filters.

See Appendix C.1. for the basic specification.

### Antialiasing filter:

Built-in antialiasing filter ensuring correct sampling of the measured signal.

Pass band (-1 dB):	24.2 kHz,
Stop band :	27.1 kHz,
Attenuation in the stop band:	> 100 dB.

<b>Sampling frequency:</b>	<b>48 kHz</b> (internal only)
----------------------------	-------------------------------

<b>Analogue to digital converter:</b>	<b>24 bit</b>
---------------------------------------	---------------

<b>Reference range:</b>	<b>HIGH</b>
-------------------------	-------------

<b>Input attenuator accuracy</b> (for $f = 1$ kHz and $T = +23^{\circ}\text{C}$ ):	<b><math>\pm 0.1</math> dB</b>
--	--------------------------------

<b>Internal oscillator accuracy</b> (for $f = 1$ kHz and $T = +23^{\circ}\text{C}$ ):	<b>0.01 %</b>
---	---------------

### Digital Filters (see Appendix D)

<b>High pass filter Z</b>	cut-off frequency 27.0 Hz / -0.1 dB (10.0 Hz / -3.0 dB), pass-band ripple < 0.1 dB, roll-off 6 dB / octave.
---------------------------	--

<b>1/1 OCTAVE</b>	15 filters with centre frequencies from 1 Hz to 16 kHz (base 2), meeting DIN 45651, IEC 1260 (Annex B) and ANSI S1.11-1986 for Type 1.
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<b>1/3 OCTAVE</b>	45 filters with centre frequencies from 0.8 Hz to 20 kHz (base 2), meeting DIN 45651, IEC 1260 (Annex B) and ANSI S1.11-1986 for Type 1.
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### FFT Analysis:

**1920 lines of the power spectrum** calculated in **real time** with *Overlapping* and linear averaging.

*Overlapping* factor:

> 37%	for 22.4 kHz band
> 68%	for 11.2 kHz band
> 84%	for 5.6 kHz band
> 92%	for 2.8 kHz band
> 96%	for 1.4 kHz band

> 98%      for 700 Hz band  
> 99%      for 350 Hz band  
> 99%      for 175 Hz band  
> 99%      for 87.5 Hz band

**Time window:**    Hanning

**Averaging:** Linear

### C.3. Specification of G7 as vibration level meter

#### **System configuration:**

G7 with SV 39A seat accelerometer or 3032M2 accelerometer.

#### **Accessories included:**

SC 61        TNC to BNC integrated connector

#### **Accessories available:**

**SV 39A**        Seat Triaxial accelerometer, 100 mV / g ( $10 \text{ mV} / \text{ms}^{-2}$ ), from 0.5 Hz to 3 kHz  
**3023M2**       Triaxial accelerometer, 10 mV / g ( $1 \text{ mV} / \text{ms}^{-2}$ ), 4 pin side connector, M3 hole mounting  
**SC 39S**       Cable used to connect the Seat Accelerometer **SV 39A** or triaxial accelerometer **3023M2**

System conforms to the ISO 8041, ISO 2631-1, ISO 5349 and ISO 10816 standards.



**Notice:** With **DYTRAN 3023M2** accelerometer the overall system specification conforms to the ISO 5349 standards for the Human Hand-Arm response to the mechanical vibration meeting requirements for Type 1 Meter.

See Appendix C.1. for other available accessories.

#### **Measured quantities**

The measured quantities in the vibration meter mode are **RMS**, **PEAK**, **P-P**, **MTVV** or **MAX**. The definitions for mentioned parameters are given in Appendix D.

#### **Linear operating ranges for the acceleration**

Two ranges with the nominal values:  $17.8 \text{ ms}^{-2}$  (**LOW**),  $316 \text{ ms}^{-2}$  (**HIGH**),  
(145 dB, 170 dB related to  $10^{-6} \text{ ms}^{-2}$ ).



**Notice:** With the accelerometer of the sensitivity equal to  $1 \text{ mV/ms}^{-2}$  the nominal ranges are equal to  $178 \text{ ms}^{-2}$  and the  $3160 \text{ ms}^{-2}$ .

#### **Mounting for vibration tests**

The accelerometer can be connected with the VLM using proper cable provided by the manufacturer.

The accelerometer can be mounted on the plate in various ways:

- using threaded stud onto a flat, smooth surface
- using thin layer of bees-wax for sticking the accelerometer into the plate
- using mica washer and isolates stud, where the body of accelerometer should be electrically isolated from the measuring object
- using permanent magnet, which also electrically isolates the accelerometer.

**Values of the measured acceleration using the accelerometer**

with the nominal sensitivity equal to  $10 \text{ mV} / \text{ms}^{-2}$  (e.g. the **SV 39A** seat accelerometer):

- Linear measurement with the **W-Bc**, **W-Bxy**, and **W-Bz** filters:  
 from  $0.001 \text{ ms}^{-2}$  to  $354 \text{ ms}^{-2}$  (the sinusoidal signal RMS)  
 from  $0.003 \text{ ms}^{-2}$  to  $500 \text{ ms}^{-2}$  (PEAK)

**Table C.16. Linear operating ranges with the W-Bc, W-Bxy and W-Bz filters**

RANGE (RMS)	Linear operating ranges	
LOW	from $1.00 \text{ mms}^{-2}$ (60.0 dB)	to $56.2 \text{ ms}^{-2}$ (155.0 dB)
HIGH	from $10 \text{ mms}^{-2}$ (80.0 dB)	to $354 \text{ ms}^{-2}$ (171.0 dB)

- Linear measurement with the **HP** filter:  
 from  $0.003 \text{ ms}^{-2}$  to  $354 \text{ ms}^{-2}$  (the sinusoidal signal RMS)  
 from  $0.03 \text{ ms}^{-2}$  to  $500 \text{ ms}^{-2}$  (PEAK)

**Table C.17. Linear operating ranges with the HP filter**

RANGE (RMS)	Linear operating ranges	
LOW	from $3.16 \text{ mms}^{-2}$ (70.0 dB)	to $56.2 \text{ ms}^{-2}$ (155.0 dB)
HIGH	from $33 \text{ mms}^{-2}$ (90.4 dB)	to $354 \text{ ms}^{-2}$ (171.0 dB)

**Values of the measured acceleration using the accelerometer**

with the nominal sensitivity equal to  $1 \text{ mV} / \text{ms}^{-2}$  (e.g. 3023M2):

- Linear measurement with the **Wh** filter:  
 from  $0.01 \text{ ms}^{-2}$  to  $3540 \text{ ms}^{-2}$  (the sinusoidal signal RMS)  
 from  $0.03 \text{ ms}^{-2}$  to  $5000 \text{ ms}^{-2}$  (PEAK)

**Table C.18. Linear operating ranges with the Wh filter**

RANGE (RMS)	Linear operating ranges	
LOW	od $10 \text{ mms}^{-2}$ (80.0 dB)	do $562 \text{ ms}^{-2}$ (175.0 dB)
HIGH	od $100 \text{ mms}^{-2}$ (100.0 dB)	do $3540 \text{ ms}^{-2}$ (191.0 dB)

- Linear measurement with the **HP** filter:  
 from  $0.03 \text{ ms}^{-2}$  to  $3540 \text{ ms}^{-2}$  (the sinusoidal signal RMS)  
 from  $0.3 \text{ ms}^{-2}$  to  $5000 \text{ ms}^{-2}$  (PEAK)

**Table C.19. Linear operating ranges with the HP filter**

RANGE (RMS)	Linear operating ranges	
LOW	from $31.6 \text{ mms}^{-2}$ (90.0 dB)	to $562 \text{ ms}^{-2}$ (175.0 dB)
HIGH	from $330 \text{ mms}^{-2}$ (110.4 dB)	to $3540 \text{ ms}^{-2}$ (191.0 dB)



**Notice:** In the measurement of the signal with the **crest factor**  $n > 1.41$  the **upper linear operating range for the RMS value is reduced**. Its value can be calculated from the equation:  $A_n = A + 10 - 20 \log(n / \sqrt{2})$  [dB], where  $A$  is the given range for the sinusoidal signal. E.g. for  $n = 10$  and  $A = 140$  the value of  $A_{10}$  is equal to  $= 133 \text{ dB}$ .



**Notice:** In the measurement conditions with the strong electromagnetic disturbances (e.g. near the high-voltage transmission lines) the lower measurement limit can be drastically shifted as the result of the external field influence on the measurement cables. In such cases, the careful shielding of the measurement cables is strongly recommended. It is worth to underline that the estimation of the external influence can be performed in-site by the observations of the measurement signal spectrum.

**Frequency range for the acceleration measurement** (+/- 10%):

0.5 Hz ÷ 5 kHz in the linear measurements with the **HP** filter



**Notice:** With the application of another vibration transducer, the frequency range given above for the **HP** filter can be different (i.e. wider).

**Basic error for the acceleration measurement:**  $< \pm 0.5$  dB

**Pre-heating time:** 1 minute

**Calibration:**

**Direct:** by the measurement of the standard signal generated by the external vibration calibrator

**Indirect:** by the declaration of the transducer's sensitivity

Calibration procedure is given in Chapter 4 of the Manual.

**Accelerometer input:**

Connector:	TNC
Impedance:	40 k $\Omega$ / 100 pF (typical)
Vibration transducers powering:	28 V / 1.5 mA current source
Range of the measured voltage:	Lower level - filter depended (see below) Upper level - 7.5 V <sub>RMS</sub> (137 dB related to 1 $\mu$ V <sub>RMS</sub> or 177 dB related to 1 $\mu$ m/s <sup>2</sup> <sub>RMS</sub> )

**Internal noise level**

Wideband noise level measured with the voltage input short-circuit (20 kHz band):

- with the **HP** filter:  $< 17$   $\mu$ V<sub>RMS</sub>
- with the **W-Bxy** filter:  $< 3$   $\mu$ V<sub>RMS</sub>
- with the **W-Bz** filter:  $< 3$   $\mu$ V<sub>RMS</sub>
- with the **W-Bc** filter:  $< 3$   $\mu$ V<sub>RMS</sub>
- with the **Wh** filter:  $< 3$   $\mu$ V<sub>RMS</sub>

**Reference range:** 170 dB

**Level indication range:** from -100 dB to +10.2 dB related to the nominal range level plus the calibration factor



**Basic accuracy:**

$< \pm 0.2$  dB for the temperature  $T=+23^{\circ}\text{C} \pm 5^{\circ}\text{C}$  for sinusoidal signal  $140\text{ dB}_{\text{RMS}}$  in the band  $10\text{ Hz} \div 20\text{ kHz}$  with the **Wh** input filter

**Measurement error in the full temperature range:**

$< \pm 0.3$  dB when the temperature is from  $-10^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$  for the sinusoidal signal  $140\text{ dB}_{\text{RMS}}$  in the band  $10\text{ Hz} \div 20\text{ kHz}$  with the **H-A** input filter

**Input divider accuracy:**

$\pm 0.1$  dB

**Digital filters****Low-pass filters:**

8 eighth-order elliptic filters with the cut-off frequencies from 10 kHz to 78.125 Hz in the binary sequence.

Ripple in the pass band:  $\pm 0.1$  dB

Attenuation in the stop band:  $> 100$  dB

**High-pass filter:**

**HP** filter

see Appendix D. for the frequency response characteristics

**Weighting filters** (see Appendix D. for the frequency response characteristics):

- **W-Bxy** from 1 Hz to 330 Hz
- **W-Bz** from 3 Hz to 1000 Hz
- **W-Bc** from 3 Hz to 1000 Hz
- **Wh** from 1 Hz to 330 Hz

## C4. Miscellaneous specification of G7

### Display

Graphical, the liquid crystals (LCD) type with the backlight, 128x64 pixels and icons.

### Memory

16 MB flash memory and 128 kB of the RAM memory.

Flash memory divided between:

- buffer for the registration of the time history and spectra (ca. 49 % of the installed memory)
- FLASH-disk for storing the measurement data files (ca. 46 % of the installed memory)
- internal program (ca. 5 % of installed memory)

### Real Time Clock

Built-in, real time with the accuracy better than 1 minute/month. If there is not any power, supply in the instrument for longer than one hour the real time clock is reset.

**Weight** 600 grams with the batteries, microphone and preamplifier

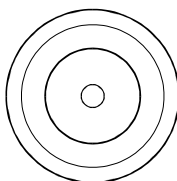
**Dimensions:** 42x82x333 mm

### Environmental parameters

- Working temperature range:  $-10^{\circ}\text{C} \div +50^{\circ}\text{C}$
- Storing temperature range:  $-20^{\circ}\text{C} \div +50^{\circ}\text{C}$

### Signal input

The measured signal, coming from the microphone preamplifier, is connected to a TNC socket presented below.



**TNC connector (external view)**

**Table C.20. Pin-out of the TNC connector**

Pin number	TNC
Central	Input
Shield	Ground

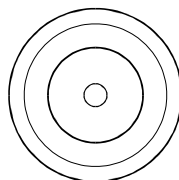
### Power supply & Ext. Pow.

Four replaceable AA batteries are the main source of instrument's powering. The power consumption from the 6 V source is  $< 120 \text{ mA}$  (at  $+ 20^{\circ}\text{C}$ ).

Therefore, typical operating time from four AA alkaline batteries should be about 15 hours. For the temperatures below 0°C, the operating time can be shorter (depending on the batteries). The instrument can be also powered from the external source (e.g. **SA 17A** or car battery) with the DC voltage from 6 V to 15 V. The voltage ripple should not exceed  $\pm 5\%$ .

The external power requirement is voltage dependant:

for 6 V                      - 150 mA DC  
for 15 V                    - 100 mA DC



**Power supply connector 5.5 / 2.1 mm (external view)**

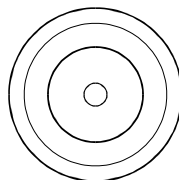
**Table C.21. Pin-out of 5.5 / 2.1 connector**

Pin number	5.5 / 2.1
Shield	Ground
1	+ 6 V ÷ 15 V

The instrument can be also powered from the USB port of a PC. In this case the following conditions and limitations should be considered:

- Until the internal batteries voltage is higher than ca. 4.6 V, the instrument operates from this source.
- When the internal batteries voltage decreases below 4.6 V and the USB is connected to a PC, the instrument switches to operate from the USB (that is indicated by the removal of the "Battery" icon from the display).
- Current capability of the USB port should be as high as 250 mA. In the case of battery-powered PCs the user should consider this additional current requirement.
- When an external power supply (e.g. **SA 17A** or car battery) is connected to **Ext. Power** terminal, the current is not drawn from the USB, as well as from internal batteries.

**EXT I/O** (Extended Input/Output) - digital Input / Output pin; 3.3 V input & output levels.  
User programmable Input / Output connector



**RCA Jack - "Cinch" (external view)**

**Table C.22. Pin-out of the RCA Jack connector**

Pin Number	RCA Jack
1	Output/Input
Shield	Ground
Chassis	Ground

Socket:	RCA Jack ("CINCH") type
Output Voltage:	63.1 mV <sub>RMS</sub> ( $\pm 5\%$ ) at 114 dB reference level of the instrument, when the calibration factor is set to 0.0 dB 1 V <sub>RMS</sub> ( $\pm 5\%$ ) at 138 dB indication of the instrument, when calibration factor is set to 0.0 dB Frequency Band (-3 dB) - 1.0 Hz ÷ 22.6 kHz
Output impedance:	51 $\Omega$ / 1%

The user in *MENU / SETUP / EXTERNAL I/O SETUP* window may set one of **EXT I/O** modes, which are available in the instrument: **ANALOG OUT, DIGITAL IN, DIGITAL OUT**

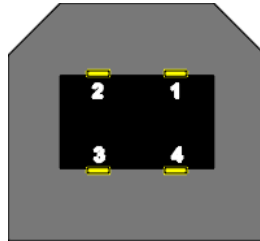
1. **ANALOG OUT**, when the measured signal from the measurement channel is fed to **EXT I/O** connector, the output levels and the impedance are as shown above
2. **DIGITAL IN**, when the **EXT. TRIGGER** function is activated, the external triggering of the instrument may be provided. In order to do that the user has to select **TRIGGER** and to set **SOURCE: EXT. IO** (path: *MENU / INPUT / TRIGGER SETUP / MEASURE TRIGGER*). The external signal for triggering is specified as follows:
  - 2.1. Trigger voltage threshold level is set to +1 V
  - 2.2. Trigger voltage slope (path: *MENU / INPUT / TRIGGER SETUP / MEASURE TRIGGER / TRIGGER*;) set by the user as **SLOPE+** (uprising, default) or **SLOPE-** (falling, auxiliary)
  - 2.3. Minimal duration of the trigger impulse: 10  $\mu$ seconds
  - 2.4. 100  $\mu$ sec release time after previous measurement is necessary before next trigger
  - 2.5. Recommended trigger voltage should not exceed  $\pm 5$  V
  - 2.6. Input impedance in this **DIGITAL IN** mode - ca. 10 k $\Omega$  / 100pF, ESD type safety
  - 2.7. When the instrument is switched-off in the **DIGITAL IN** mode, the voltage impulse on the **EXT I/O** will be able to switch-on the instrument, however in this case the minimal duration of the trigger impulse of 100 msec is necessary, with uprising voltage slope
3. **DIGITAL OUT** - two different functions are available in this mode:
  - 3.1. **FUNCTION: TRIG. PULSE**, when this function is selected, the **EXT I/O** terminal is set as output, which enables one to trigger another instrument (one instrument or more with trigger inputs connected together in parallel), output trigger impulse meets specification given below:
    - a) trigger impulse is generated before every measurement
    - b) output voltage range from 0 V or 3 V
    - c) triggering slope: uprising
    - d) output impedance: 51  $\Omega$
    - e) duration of the impulse: ca. 30  $\mu$ sec
  - 3.2. **FUNCTION: ALARM PULSE**, when this function is selected, the **EXT I/O** terminal is set as output, which changes its output level, when current result of measurement exceeds user-programmable threshold level. In this case the **EXT I/O** output operates as output of analogue comparator with user-programmable threshold. This feature enables one to control an external device as alarm-indicator or similar
    - a) electrical specification of this output are as follows: 0 V to 3 V voltage range, 51  $\Omega$  output impedance
    - b) output produces a voltage level (not impulse)
    - c) **ACTIVE LEVEL** setting may be selected by the user in menu as **LOW** or **HIGH**. If **HIGH** is selected, the output alternates from 0 V to 3 V till measurement result is greater than threshold value
    - d) **SOURCE** setting selects source of measurement result to be compared with the threshold value. One of three results sources may be selected **PEAK(1)**, **SPL(1)** or **LEQ(1)**
    - e) **ALARM LEVEL** enables one setting-up threshold value

## Interface USB

The **G7** USB interface enables remote control of the instrument and data transfer up to attainable with 12 MHz clock.

There are two USB ports available on the **G7** bottom panel.

### USB “Device” port

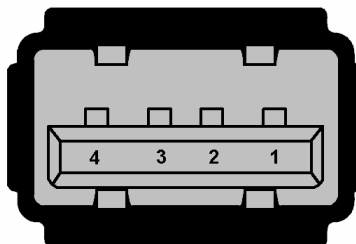


USB socket (external view)

**Table C.23. Pin-out of the USB-Device connector**

Pin number	USB
1	Vbus
2	D-
3	D+
4	GND
Shield	Ground

### “Host” USB port



USB socket (external view)

**Table C.24. Pin-out of the USB-Host connector**

Pin number	USB
1	Vbus
2	D-
3	D+
4	GND
Shield	Ground

**RS 232 interface (optional)**

The RS 232 interface option for the **G7** is provided by means of the **SV 55** interface. It conforms to the EIA Standard RS 232C. It enables the user to programme remotely all instrument functions and the transmissions to and from the analyser with the speed from 300 bit/s to 115200 bit/s.

**The SV 55 must be connected to the G7 USB Host port and proper operation of this port has to be set-up in the instrument's SETUP Menu before!**

Below, the SV 55 - DB 09 F - pin female connector pin-out is given.

**Table C.25. SV 55 interface description**

PC RS 232, 9 - pin connector Signal name	SV 55 connector (DB 09 F) Pin number
1 – LSD	1 (not connected)
2 – RXD	3
3 – TXD	2
4 – DTR	6 connected to pin 4
5 – GND	5
6 – DSR	4 connected to pin 6
7 – RTS	8
8 – CTS	7
9 – GND	9 (not connected)

**Electromagnetic Compatibility (EMC)**

The product described above is compliant with the following EMC standards:

1. For the EMC emissions specification, according to IEC 61672-1 (chapter 5.18) and IEC 61672-2 (chapter 9), with test methods applied according to CISPR 22:1997 and CISPR 16:1999
2. For the EMC immunity specification, according to IEC 61672-1 (chapter 6.5 and 6.6) and IEC 61672-2 (chapter 7.9 and 7.10), with test methods applied according to IEC 61000-4-2 and IEC 61000-4-3:2002.



**Notice: EMC compatibility is guaranteed only with the original accessories supplied by SVANTEK!**

**Safety**

The product described above is compliant with following standards:  
EN 61010-1:2001 and IEC 61010-1:2001

**Compliance with EU Directives**

CE mark indicates compliance with EMC Directive 89/336/EEC and Low Voltage Directive 2006/95/EC

**Normative references**

The following referenced documents are indispensable for application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document applies.

IEC 61672-1:2005 Electroacoustics - Sound level meters - Part 1: Specifications

IEC 61672-2:2005 Electroacoustics - Sound level meters - Part 2: Pattern evaluation tests

IEC 651 Sound level meters

IEC 61260 Electroacoustics - Octave-band and fractional-octave-band filters

CISPR 22:1997 Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement

CISPR 16:1999 Specification for radio disturbance and immunity measuring apparatus and methods

IEC 61000-4-2 Electromagnetic compatibility (EMC)- Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test

IEC 61000-4-3:2002 Electromagnetic compatibility (EMC) - Part 4-3 : Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test

EN 61010-1:2001 or IEC 61010-1:2001 Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 1: General requirements

EMC Directive 89/336/EEC

Low Voltage Directive Directive 2006/95/EC





## D. DEFINITIONS AND FILTER CHARACTERISTICS

### D.1 Definitions and formulae

#### D.1.1 Basic symbols and notation

- T** - current period of the measurement.
- T<sub>b</sub>** - period after which the results are saved in the logger set in the **LOGGER STEP** (*path: MENU / INPUT / MEASUREMENT SETUP / LOGGER STEP*).
- T<sub>c</sub>** - period of the measurement is set in the **INTEGR. PERIOD** (*path: MENU / INPUT / MEASUREMENT SETUP / INTEGR. PERIOD*).
- T<sub>e</sub>** - exposure time (period during which a person is exposed to the action of noise). This parameter can be set in the **EXPOSURE TIME** (*path: MENU / SETUP / EXPOSURE TIME*). The available values are from 1 minute to 8 hours with 1 minute step.
- T<sub>8h</sub>** - period equal to 8 hours (28 800 seconds).
- τ** - detector time constant is set in the **DETECTOR** (equal to **IMPULSE**, **FAST** or **SLOW** in the case of sound mode and equal to **100 ms**, **125 ms**, **200 ms**, **500 ms**, **1 s**, **2 s**, **5 s** or **10 s** in the case of vibration mode; *path: MENU / INPUT / PROFILE x / DETECTOR*). The available values are equal to **IMPULSE**, **FAST** or **SLOW**.
- a<sub>w</sub>(t)** - the temporary value of the measured sound with the weighting filter **W** (equal to **A**, **C** or **Z** in the case of sound mode and equal to **HP1**, **HP3**, **HP10**, **KB**, **Wk**, **Wd**, **Wc**, **Wj**, **Wm**, **Wh**, **Wg**, **Wb** in the case of vibration mode; *path: MENU / INPUT / PROFILE x / FILTER*) on the input of the RMS detector.
- p<sub>w</sub>(t)** - the temporary value of the measured sound with the weighting filter **W** (equal to **A**, **C** or **Z** in the case of sound mode and equal to **HP1**, **HP3**, **HP10**, **KB**, **Wk**, **Wd**, **Wc**, **Wj**, **Wm**, **Wh**, **Wg**, **Wb** in the case of vibration mode; *path: MENU / INPUT / PROFILE x / FILTER*) on the output of the RMS detector calculated from the equation:

$$p_w(t) = \left( \frac{1}{\tau} \int_{-\infty}^t a_w^2(t_x) \exp\left(-\frac{t_x - t}{\tau}\right) dt_x \right)^{1/2}$$

where:

**t<sub>x</sub>** - time (variable of the integration).

$$r_w(t) = \begin{cases} a_w(t) & \text{path : MENU / SETUP / RMS INTEGRATION / LINEAR} \\ p_w(t) & \text{path : MENU / SETUP / RMS INTEGRATION / EXPONENTIAL} \end{cases}$$

**p<sub>0</sub>** - the reference value equal to 20 μPa.

**Q** - the exchange rate in decibels equal to **2**, **3**, **4** or **5** and is set in the **EXCHANGE RATE** (*path: MENU / INPUT / DOSIMETER SETUP / EXCHANGE RATE*). The value of **Q** influences the calculations of dose meter results, namely **DOSE**, **D<sub>8h</sub>** and **LAV**. The exposure rate equal to 3 complies with ISO R 1999 "Assessment of Occupational Noise Exposure for Hearing Conservation Purposes", while **Q** equal to 5 complies with the American "Occupational Safety and Health Act" – OSHA. The value of **q** used in the calculations of **DOSE**, **D<sub>8h</sub>** and **LAV** is taken from the formula:

$$q = \begin{cases} \frac{Q}{\log 2} & \text{for } Q \neq 3 \\ 10 & \text{for } Q = 3 \end{cases}$$

$L_T$  - the threshold sound level is set in the **THRESHOLD LEVEL** (*path: MENU / INPUT / DOSIMETER SETUP / THRESHOLD LEVEL*). The available values are as follows: **None**, **75 dB**, **80 dB**, **85 dB** or **90 dB**.

$L_c$  - the criterion sound level is set in the **CRITERION LEVEL** (*path: MENU / INPUT / DOSIMETER SETUP / CRITERION LEVEL*). The available values are as follows: **80 dB**, **84 dB**, **85 dB** or **90 dB**.

$L(t)$  - sound level (a function of time) measured with the selected time constant (**IMPULSE**, **FAST** or **SLOW**; *path: MENU / INPUT / PROFILE x / FILTER*) and the weighting filter (equal to **A**, **C** or **Z**) calculated from the formula:

$$L(t) = 20 \log \frac{p_w(t)}{p_0}$$

$L_d(t)$  - sound level (a function of time), depends on the selected threshold level. In the case when the **None** option was selected:

$$L_d(t) = L(t)$$

In the other cases (when the **THRESHOLD LEVEL** (*path: MENU / INPUT / DOSIMETER SETUP / THRESHOLD LEVEL*) is equal to **75 dB**, **80 dB**, **85 dB** or **90 dB**) this sound level is taken from the formula:

$$L_d(t) = \begin{cases} L(t) & \text{for } L(t) \geq L_T \\ -\infty & \text{for } L(t) < L_T \end{cases}$$

## D.1.2 Definitions of the quantities measured in sound mode

### PEAK value

The **PEAK** value (Peak Sound Pressure or Peak Sound Level) depends on the weighting filter **W** (equal to **A**, **C** or **Z**) and is calculated for the given **T** from the formula:

$$\text{PEAK} = 20 \log \left( \max_T \left| \frac{a_w(t)}{p_0} \right| \right)$$

In the case of the **PEAK** value saved as the main result  $T = T_c$ . When the **PEAK** value is saved in the files of the logger (time history) -  $T = T_b$ .

### SPL function

The **SPL** function (**S**ound **P**ressure **L**evel) - gives an equivalent of the **Sound Level Meter** according to the **IEC 651 Standard** (meeting the requirements for the **Type "1"** instrument). The value of the functions depends on the weighting filter **W** (equal to **A**, **C** or **Z**; *path: MENU / INPUT / PROFILE x / FILTER*) and is calculated from the formula:

$$\text{SPL} = 20 \log \left( \max_{T_1} \frac{p_w(t)}{p_0} \right)$$

where:

$T_1$  - the last second of the measurement.

### MAX result

The **MAX** result means the maximal value on the detector output for the integration period. The **MAX** result for the period of 1 second is equal to the value of the **SPL** function. The **MAX** result is calculated according to the formula:

$$\text{MAX} = 20 \log \left( \max_T \frac{p_w(t)}{p_0} \right)$$

In the case of the **MAX** value saved as the main result  $T = T_c$ . When the **MAX** value is saved in the files of the logger (time history) -  $T = T_b$ .

### MIN result

The **MIN** result is calculated according to the formula:

$$\text{MIN} = 20 \log \left( \min_T \frac{p_w(t)}{p_0} \right)$$

In the case of the **MIN** value saved as the main result  $T = T_c$ . When the **MIN** value is saved in the files of the logger (time history) -  $T = T_b$ .

### LEQ function

The **LEQ** function enables the user to calculate the RMS value of sound pressure in the given time period. The instrument operates as the standard **Integrating Sound Level Meter** and conforms to the **IEC 804 Standard** (meeting the requirements for the **Type 1** instrument). The value of the **LEQ** function is calculated according to the formula:

$$\text{LEQ} = 20 \log \left( \frac{1}{T} \int_0^T (r_w(t)/p_0)^2 dt \right)^{1/2}$$

In the case the **LEQ** value saved as the main result  $T = T_c$ .



**Note:** For  $T = T_b$  the **LEQ** values are saved in the files of the logger (time history) as the **RMS** results (see below).

### RMS result

The **RMS** result, saved in the logger's file, is calculated according to the formula of the **LEQ** function. The value of the **RMS** result is calculated according to the formula:

$$\text{RMS} = 20 \log \left( \frac{1}{T_b} \int_0^{T_b} (r_w(t)/p_0)^2 dt \right)^{1/2}$$

### SEL result

The **SEL** result (Sound Exposure Level) is essentially the subset of the **LEQ** function. Its value is equal to the **LEQ result referred to the integration time equal to one second** (so, for the **INT. TIME=1 s**, **SEL** is always equal to **LEQ**). The value of the **SEL** function is calculated according to the formula:

$$\text{SEL} = 20 \log \left( \int_0^T (r_w(t)/p_0)^2 dt \right)^{1/2} = \text{LEQ} + 10 \cdot \log \frac{T[s]}{1[s]}$$

In the case of the **SEL** value saved as the main result  $T = T_c$ . The **SEL** value is not saved in the files of the logger (time history).

### Ltm3 and Ltm5 results

The Ltm3 and Ltm5 results (Takt-Maximal Levels) are calculated according to the German standard TA Larm.

### LEPd result

The **LEPd** result (Exposure level related to 8-hours working day) is calculated on the base of the **LEQ** from the formula:

$$\text{LEPd} = \text{LEQ} + 10 \cdot \log \frac{T_e}{T_{8h}}$$

### OVL result

The **OVL** result (Overload) presents the percentage of the overloaded input signal, which occurred during the selected  $T_c$  - measurement time set in the **INTEGR. PERIOD** (*path: MENU / INPUT / MEASUREMENT SETUP / INTEGR. PERIOD*).

### Statistical Levels Ln

The noise level **L(t)** is the continuous random variable. The probability that the temporary noise level **L(t)** belongs to the interval  $\langle L_k, L_k + \Delta L \rangle$  is called the class density and it can be expressed by the equation:

$$P_k[L_k \leq L(t) \leq L_k + \Delta L] = \sum_{i=1}^n \Delta t_i / P$$

where:

$\Delta t_i$  - time intervals, in which the noise level  $L(t) \in \langle L_k, L_k + \Delta L \rangle$  occurs,

$\Delta L$  - so-called class interval or distribution class of the series,

**P** - total observation period.

In the case when the class interval approaches infinity, the probability of **L(t)** tends to the probability of  $L_k$ . In practice,  $\Delta L$  value is strictly determined and it depends mainly on the dynamics of the measurements performed in the instrument. In G7 instrument, there are 120 classes and the width of each class is equal to 1 dB.

The histogram is the set of the class density values calculated for all classes. In the G7 instrument the histogram is saved in the result files if the **SAVE STATISTICS** (*path: MENU / FILE / SAVE OPTIONS / SAVE STATISTICS*) is activated (cf. the detailed description of the relevant table in App. B).

The statistical distribution function, which determines the probability (expressed in %) of the noise occurrence on the level equal or less than  $L_k + \Delta L$  is given by the formulae:

$$P[L(t) \leq L_j] = \sum_{k=1}^j P_k(L)$$

The cumulative density function, expressed by the equation:

$$P[L(t) > L_j] = 1 - P[L(t) \leq L_j]$$

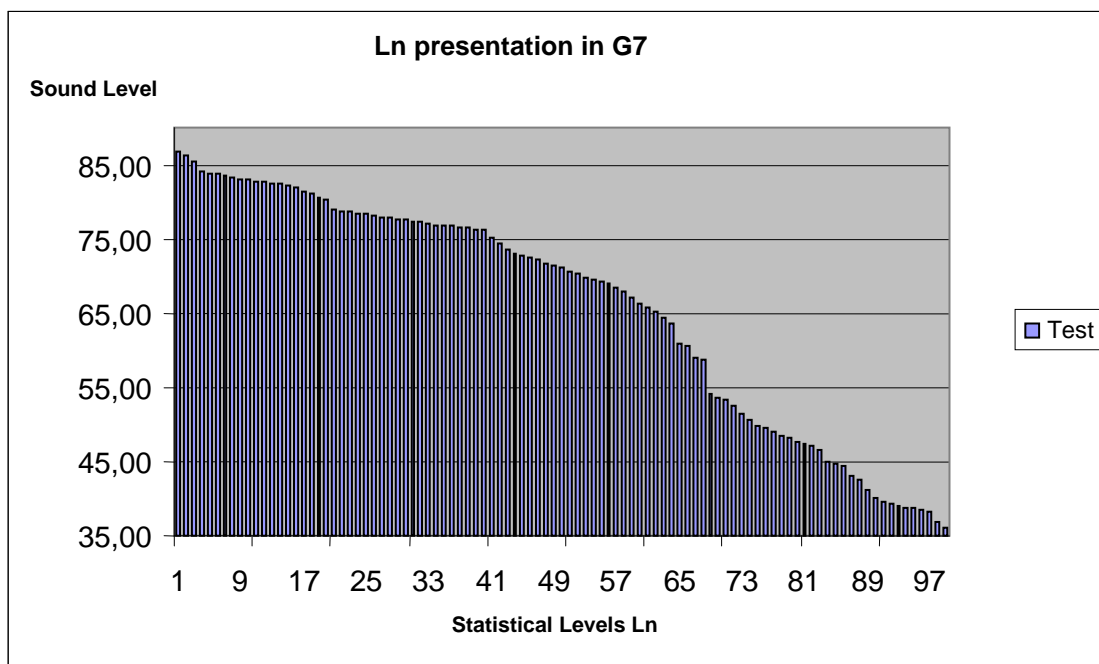
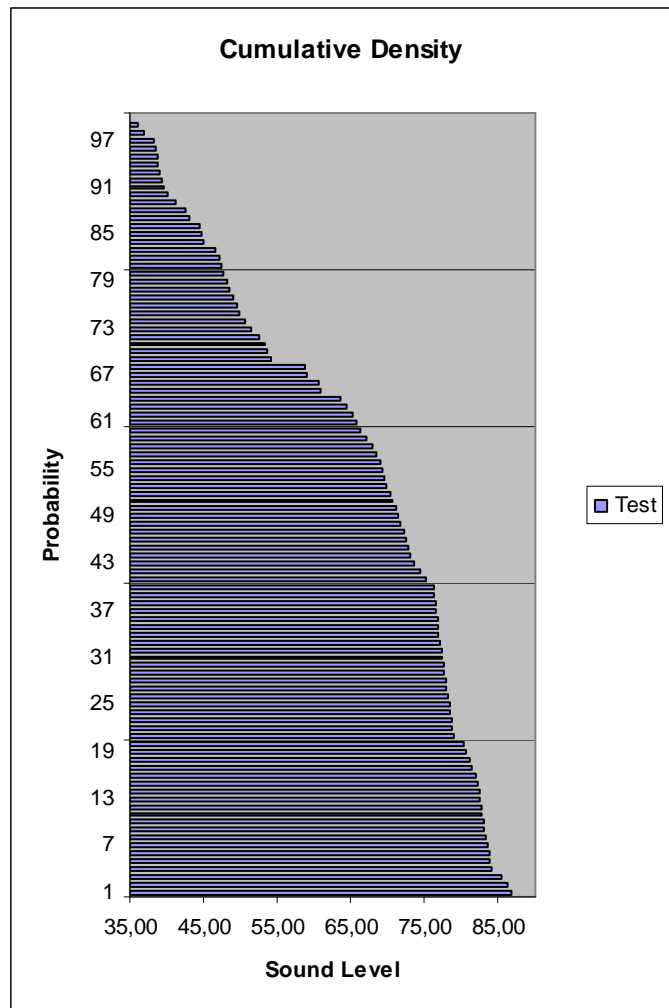
is directly used to determine so-called statistical levels **Ln** or position parameters of the distribution.

The **Ln** is the certain boundary level surpassed by the temporary noise level values in not more than **n%** of the observation period.

**Example:** Let us assume that **L35** is equal to 76.8 dB. It means that during the measurements the noise level 76.8 dB was exceeded in not more than 35% of the observation period.

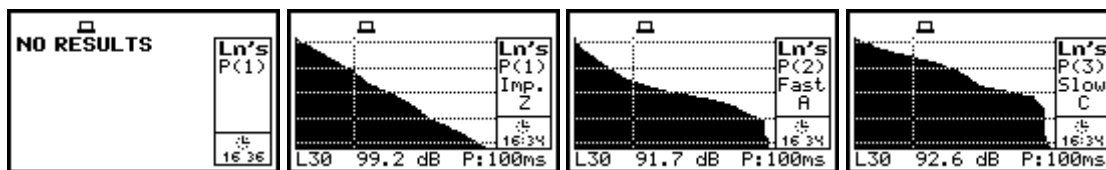
The cumulative density function for the exemplary data is presented in Figure on the right side. In order to determine the **Ln** level one has to draw the horizontal cursor and find out the crossing point between the cumulative density function and the cursor. In G7 instrument the user can determine 99 statistical levels - from **L01** to **L99** (1% step of observation period).

The display in G7 instrument has only 64 pixels on the vertical axis and 128 on the horizontal one. It is obvious that the change of the axes is more suitable for the presentation of 99 statistical levels. In this case, the user has to draw the vertical cursor and the value on it gives the required statistical level (the value of the noise level, which happened during the performed measurements in not more than selected percentage of the observation period).



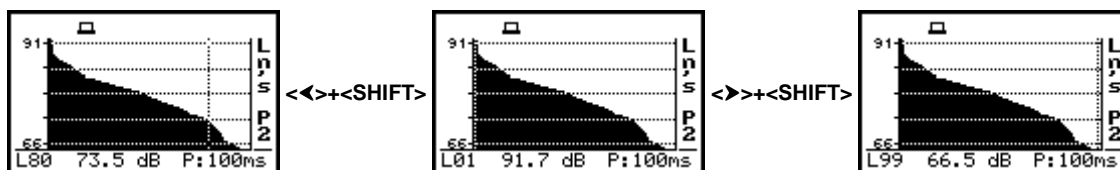
Two presentation modes of the statistical levels are available in the G7 instrument. In both modes, the **Ln** values, selected by the cursor, are displayed in the bottom line together with its value and units (dB). The P value indicating the observation period equal to 100 ms (it means that the statistical results are updated every 100 ms) is placed at the end of the bottom line. The profile's number the statistics are

taken from, the RMS detector (**Lin.**, or **Exp.: Fast, Slow or Imp.**), the filter's name (**A, C or Z**) and real time are displayed on the right side of the view in the first presentation mode. The selection of the profile is made by pressing the **<SHIFT>** and **<▲>** or the **<SHIFT>** and **<▼>** push-buttons. The same result can be achieved after pressing the **<ALT>** and **<◀>** or **<ALT>** and **<▶>** push-buttons.



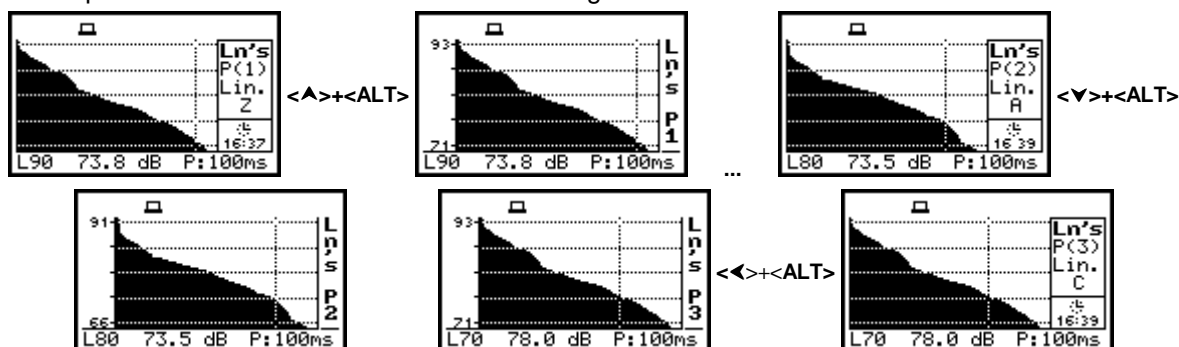
Results shown in the first presentation mode of statistical levels

The selection of the **Ln** to be displayed is done by pressing the **<◀>**, **<▶>** push-buttons. The statistics **L01** is immediately available after pressing the **<SHIFT>** and **<◀>** while the **L99** - after pressing the **<SHIFT>** and **<▶>** push-buttons.



Results shown in the second presentation mode; the selection of the statistical level

The change of the presentation mode is done by pressing the **<ALT>** and **<▲>** or the **<ALT>** and **<▼>** push-buttons. The second presentation mode of statistical levels differ slightly from the first one: the description on the left side is shorter but on the right side the value of the statistical levels are shown.



Results shown in both presentation modes of statistical levels; the change of the mode

### D.1.3 Definitions of the results measured in dosimeter mode

#### DOSE result

The **DOSE** result is the quantity of noise received by the worker, expressed as the percentage of the whole day acceptable value. This result is calculated from the formula:

$$\text{DOSE} = \frac{100\%}{T_{8h}} \int_0^T 10^{\frac{L_d(t) - L_c}{q}} dt$$

#### D\_8h result

The **D\_8h** result is the quantity of noise received by the worker during 8 hours. This result is calculated from the formula:

$$D_{8h} = \frac{100\%}{T} \int_0^T 10^{\frac{L_d(t) - L_c}{q}} dt = \frac{T_{8h}}{T} \cdot DOSE$$

### LAV result

The **LAV** result is the average level of the acoustic pressure for the given time period of the measurement. This result is calculated from the formula:

$$LAV = q \cdot \log \left( \frac{1}{T} \int_0^T 10^{\frac{L_d(t)}{q}} dt \right)$$

In the case of **Q** (the exchange rate) equal to 3 the **LAV** result has the same value as **LEQ** (if the **EXPONENTIAL** option is selected in the **RMS INTEGRATION** (path: *MENU / SETUP / RMS INTEGRATION*)).

### TLAV result

The **TLAV** result is the average level of the acoustic pressure of the measurement. This result is calculated from the formula:

$$LAV = q \cdot \log \left( \int_0^T 10^{\frac{L_d(t)}{q}} dt \right)$$

### SEL8 result

The **SEL8** result is the **SEL** result corresponding to the integration time equal to 8 hours. The **SEL8** result is calculated on the base of the **LEQ** according to the formula:

$$SEL8 = LEQ + 10 \cdot \log \frac{T_{8h}[s]}{1[s]}$$

### PSEL result

The **PSEL** result (individual Sound Exposure Level to the noise) is equal to the standing sound level in a measurement period. The **PSEL** result is calculated on the base of the **LEQ** according to the formula:

$$PSEL = LEQ + 10 \cdot \log \frac{T}{T_{8h}}$$

### E result

The **E** result (Exposition) represents the amount of the acoustical energy received by the worker and it is expressed in the linear units (Pa<sup>2</sup>h). The **E** value is calculated according to the formula:

$$E = \frac{T[s]}{3600} p_o^2 \cdot 10^{\frac{LEQ}{10}}$$

### E\_8h result

The **E\_8h** result (Exposition in 8 hours) represents the amount of the acoustical energy received by the worker during 8 hours. The **E\_8h** value is calculated according to the formula:

$$E_{8h} = 8[h] \cdot p_o^2 \cdot 10^{\frac{LEQ}{10}}$$

The **E\_8h** result is expressed in the linear units (Pa<sup>2</sup>h).

### D.1.4 Definitions of the quantities measured in vibration mode

#### PEAK value

The **PEAK** value is calculated for the given **T** from the formula:

$$\mathbf{PEAK} = \max_{\mathbf{T}} |a_{\mathbf{W}}(t)|$$

In the case of the **PEAK** value saved as the main result **T** = **T<sub>c</sub>**. When the **PEAK** value is saved in the files of the logger (time history) - **T** = **T<sub>b</sub>**.

#### P-P value

The **P-P** result, saved in the logger's file, is calculated according to the formula:

$$\mathbf{P - P} = \max_{\mathbf{T}} (0, a_{\mathbf{W}}(t)) - \min_{\mathbf{T}} (0, a_{\mathbf{W}}(t))$$

For the **P-P** result saved in the files of the logger (time history) **T** = **T<sub>b</sub>**.

#### MAX result

The **MAX** result, saved in the logger's file, is calculated according to the formula:

$$\mathbf{MAX} = \max_{\mathbf{T_b}} (p_{\mathbf{W}}(t))$$

The **MAX** main result is calculated according to the formula:

$$\mathbf{MAX} = \max_{\mathbf{T}} (p_{\mathbf{W}}(t)) \quad \text{for } \tau \neq 1 \text{ second}$$

#### MTVV result

The **Maximum Transient Vibration Value** - **MTVV**, saved as the main result, is defined (according to the **ISO 8041** standard) as:

$$\mathbf{MTVV} = \max_{\mathbf{T}} (p_{\mathbf{W}}(t)) \quad \text{for } \tau = 1 \text{ second}$$

#### RMS result

The **RMS** result is calculated according to the formula:

$$\mathbf{RMS} = \left( \frac{1}{\mathbf{T}} \int_0^{\mathbf{T}} r_{\mathbf{W}}^2(t) dt \right)^{1/2}$$

For the **RMS** result saved in the files of the buffer (time history) **T** = **T<sub>b</sub>**.

#### VDV result

The fourth power vibration dose value (**VDV**) expressed in meters per second taken to the power of 1.75 (m/s<sup>1.75</sup>) is calculated from the formula:

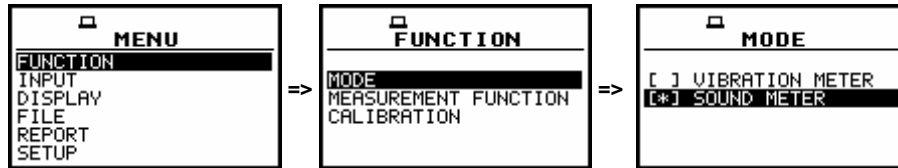
$$\mathbf{VDV} = \left( \int_0^{\mathbf{T}} r_{\mathbf{W}}^4(t) dt \right)^{1/4}$$



## D.2 Frequency characteristics of the implemented digital filters

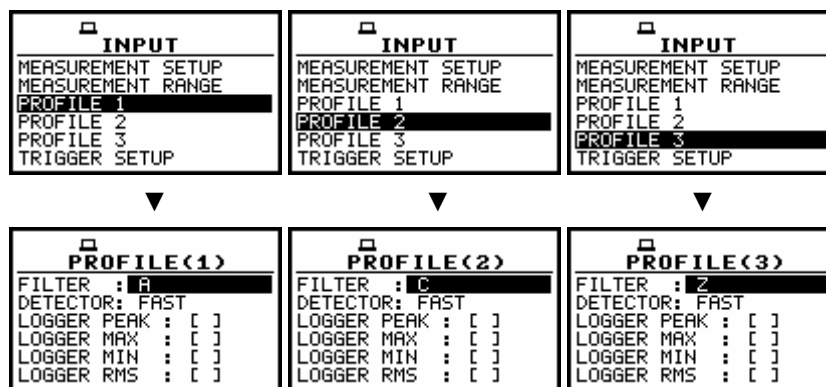
### D.2.1 Digital weighting filters implemented in sound mode

The sound mode is selected in the MENU / FUNCTION / MODE window (**SOUND METER**).



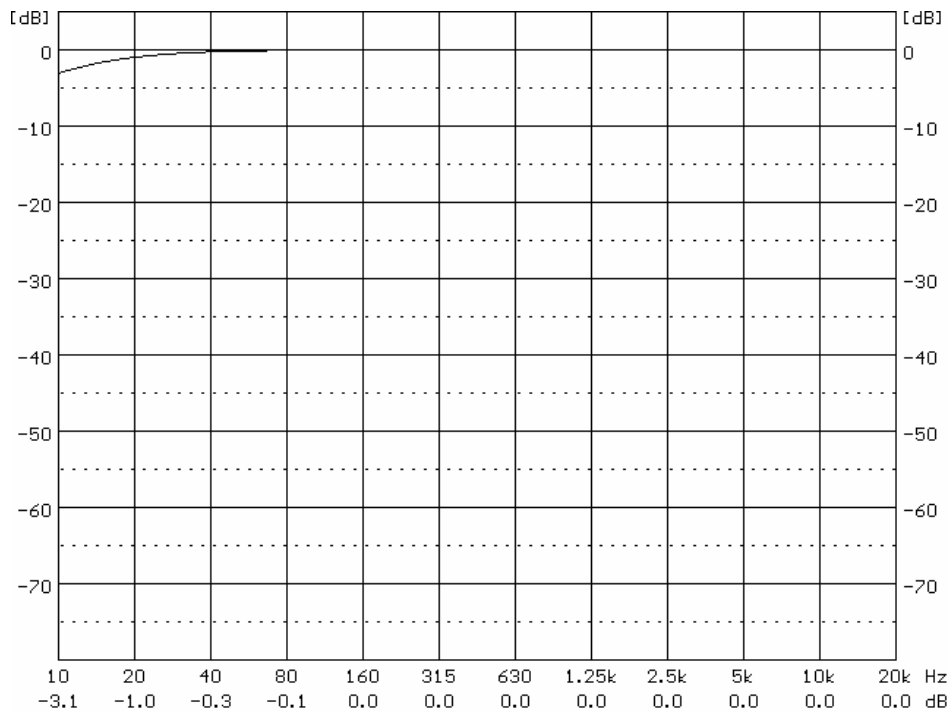
MENU, FUNCTION and MODE windows; sound mode selection

The weighting filters, which are available in sound mode (**Z**, **A**, and **C**) are selected in the MENU / INPUT / PROFILE (x) windows.

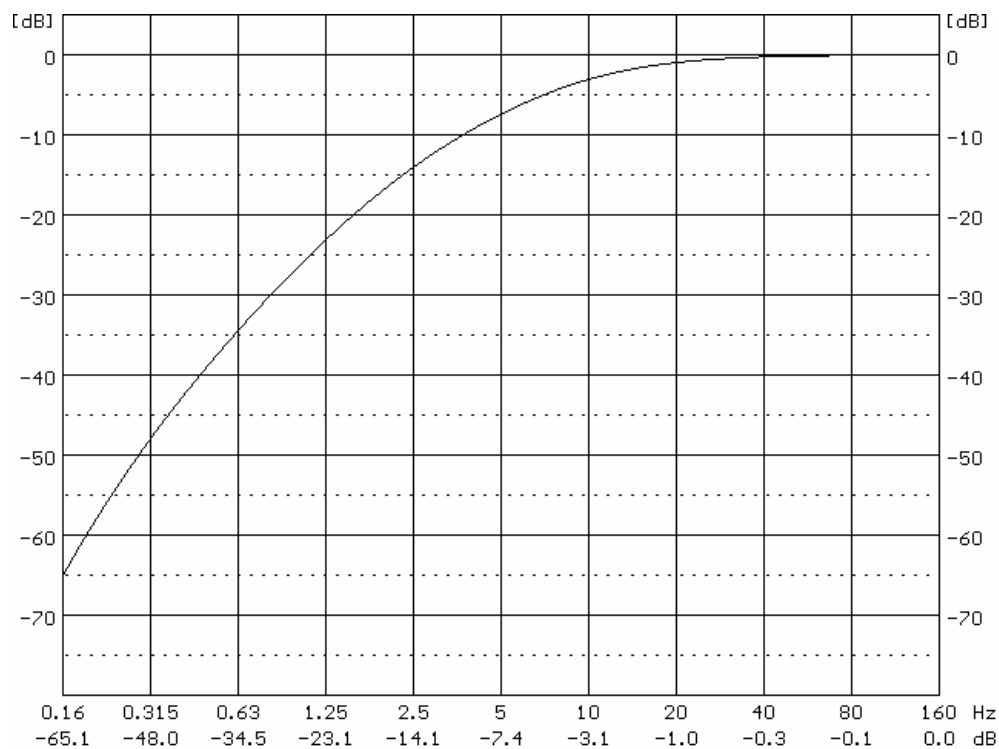


INPUT and PROFILE (x) windows; weighting filter selection

**Z:** cut-off frequency: 10.0 Hz / -3.0 dB.

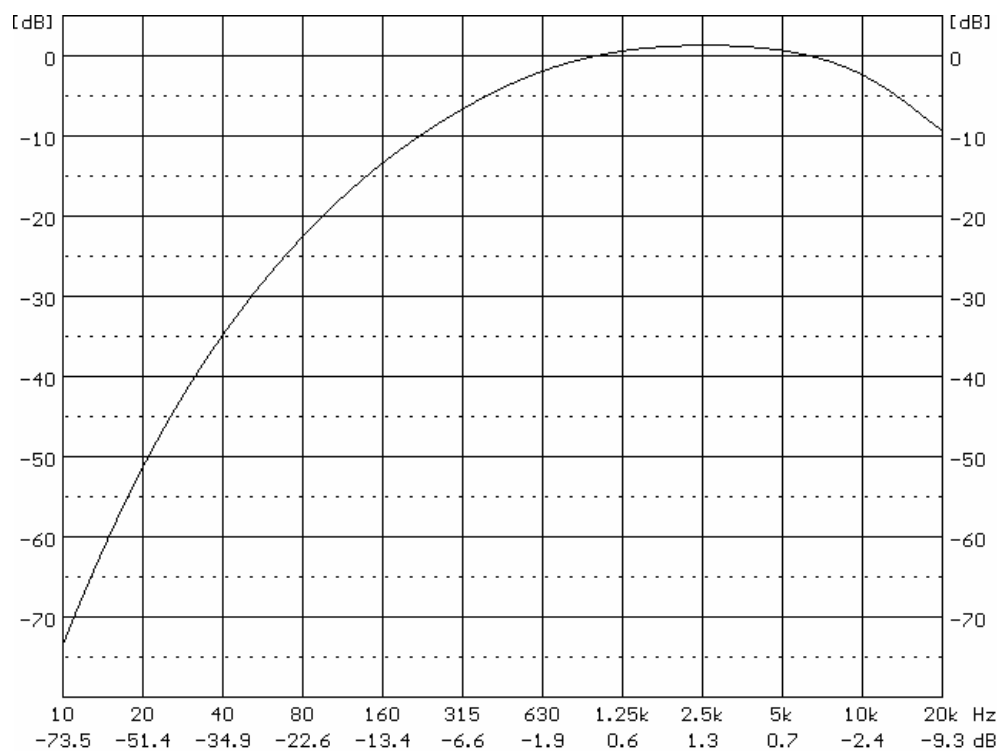


Full band frequency characteristics of the Z filter implemented in the instrument



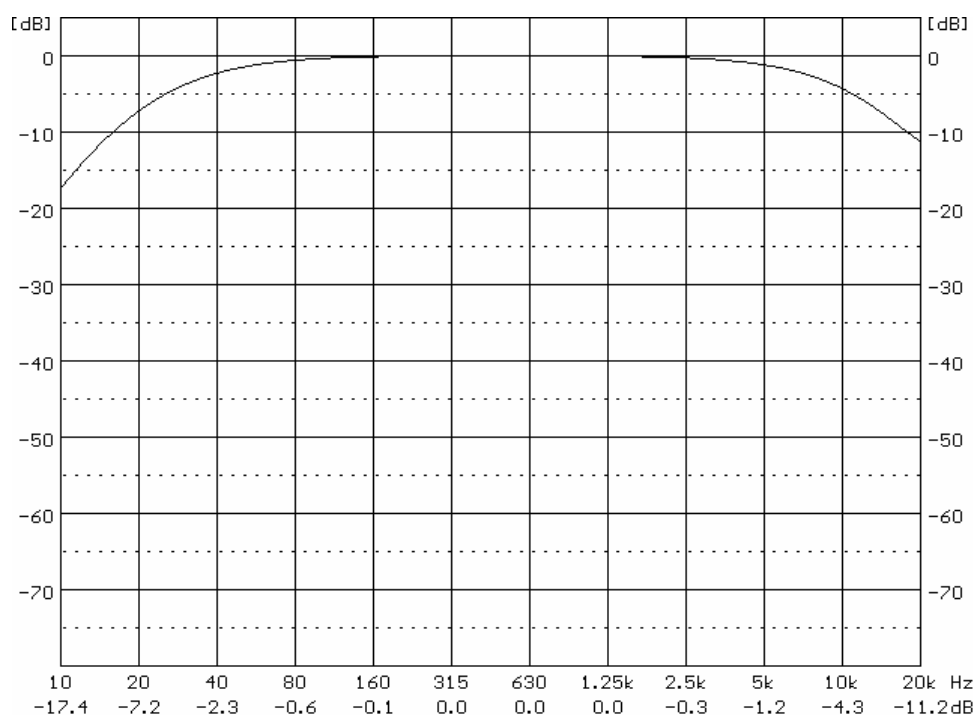
**Low band frequency characteristics of the Z filter implemented in the instrument**

**A** type 1 according to the IEC 651 standard.



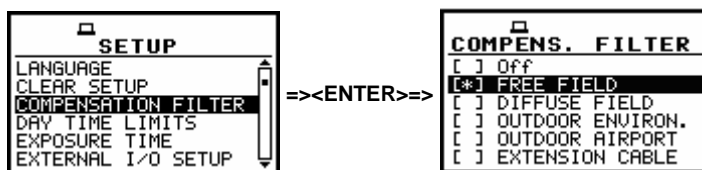
**Frequency characteristics of the A filter implemented in the instrument**

**C** type 1 according to the IEC 651 standard.

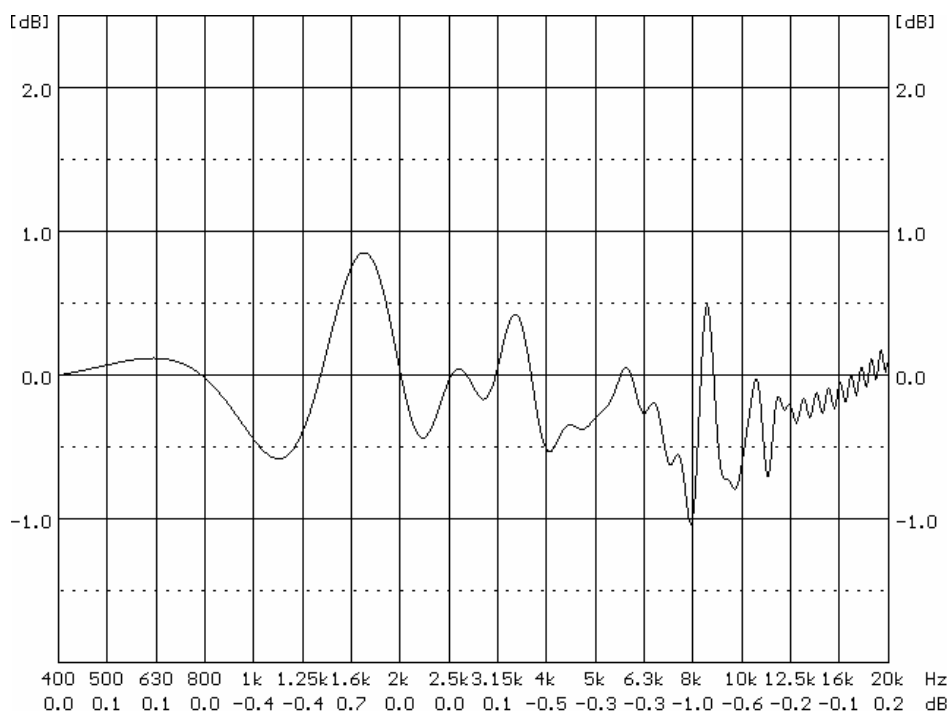


**Frequency characteristics of the C filter implemented in the instrument**

The **FREE FIELD** filter is set in MENU / SETUP / COMPENSATION / FREE FIELD position

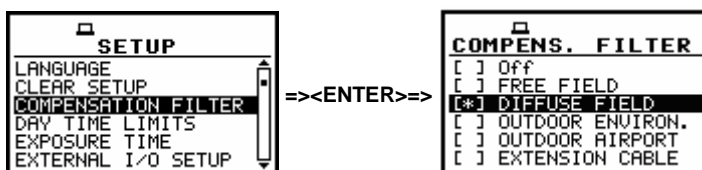


**SETUP and COMPENSATION FILTER windows; the activation of the FREE FIELD filter**

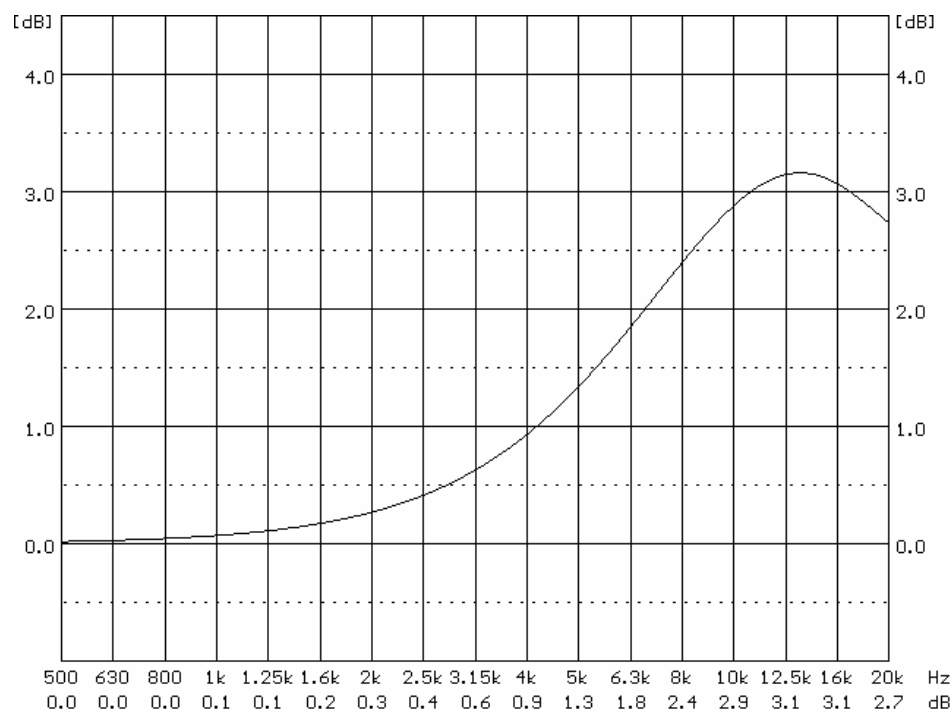


**Frequency characteristics of the FREE FIELD filter implemented in the instrument**

The **DIFFUSE FIELD** filter is set in MENU / SETUP / COMPENSATION FILTER / FREE FIELD position

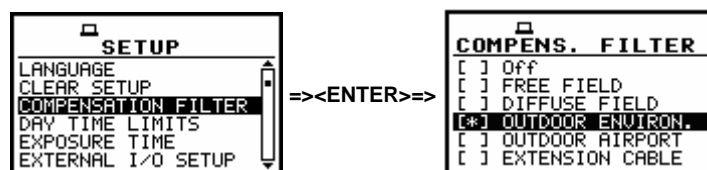


**SETUP and COMPENSATION FILTER windows; the activation of the DIFFUSE FIELD filter**

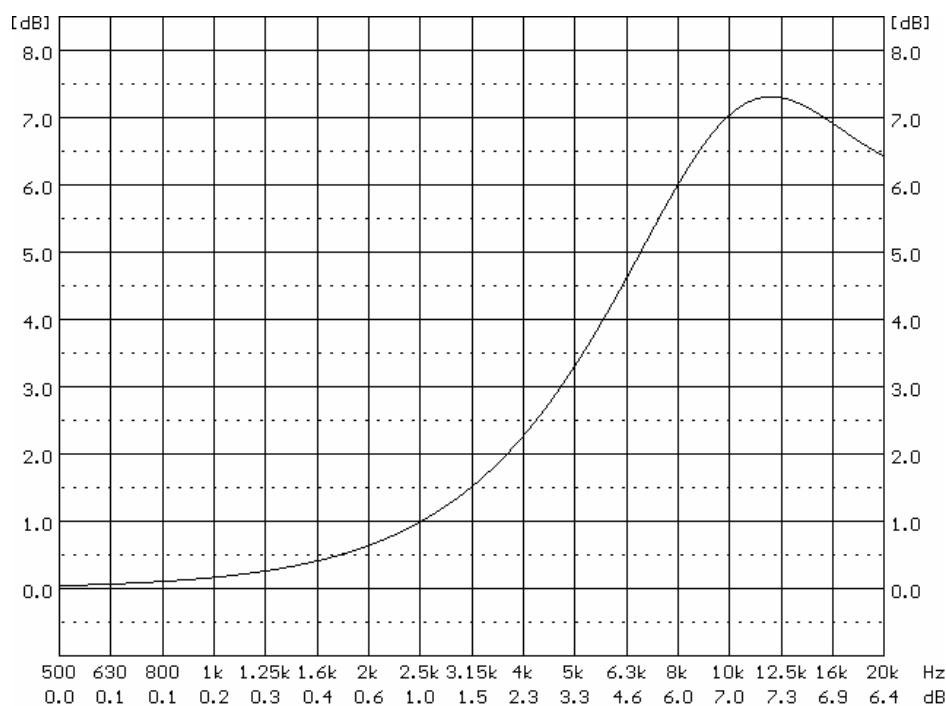


Frequency characteristics of the DIFFUSE FIELD filter implemented in the instrument

The **ENVIRONMENTAL** filter is set in MENU / SETUP / COMPENSATION FILTER / OUTDOOR ENVIRON. position.

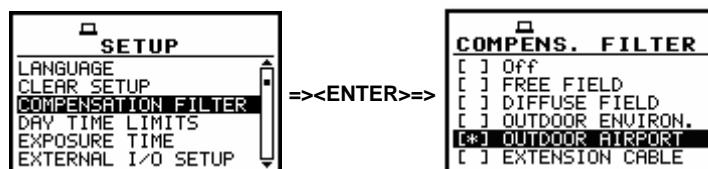


SETUP and COMPENSATION FILTER windows; the activation of the OUTDOOR ENVIRONMENTAL filter

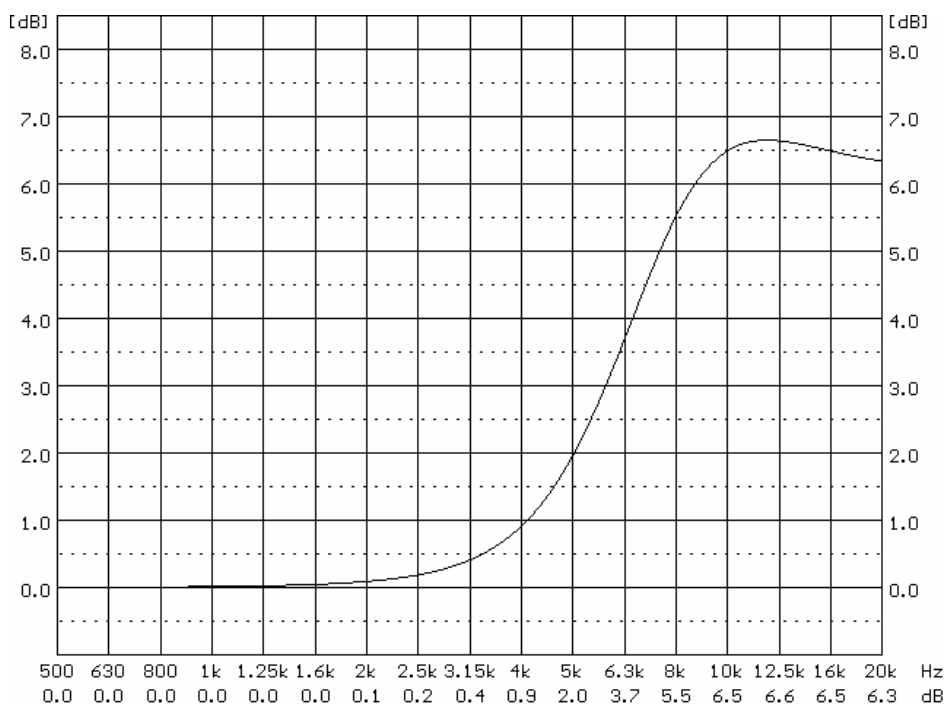


### Frequency characteristics of the ENVIRONMENTAL filter implemented in the instrument

The **AIRPORT** filter set in MENU / SETUP / COMPENSATION FILTER / OUTDOOR AIRPORT position.



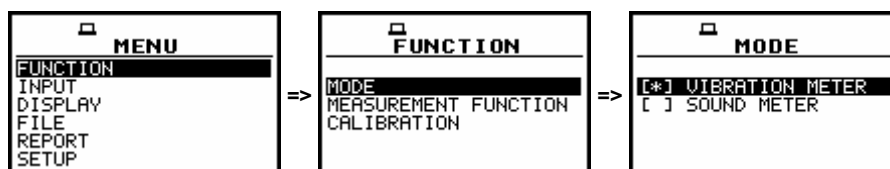
SETUP and COMPENSATION FILTER windows; the activation of the OUTDOOR AIRPORT filter



Frequency characteristics of AIRPORT filter implemented in the instrument

## D.2.2 Digital weighting filters implemented in vibration mode

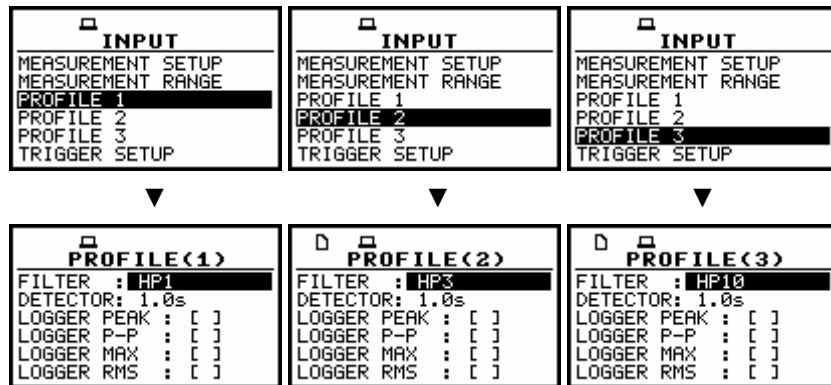
The vibration mode of the **G7** instrument is selected in the MENU / FUNCTION / MODE window (**VIBRATION METER**)



MENU, FUNCTION and MODE windows; vibration mode selection

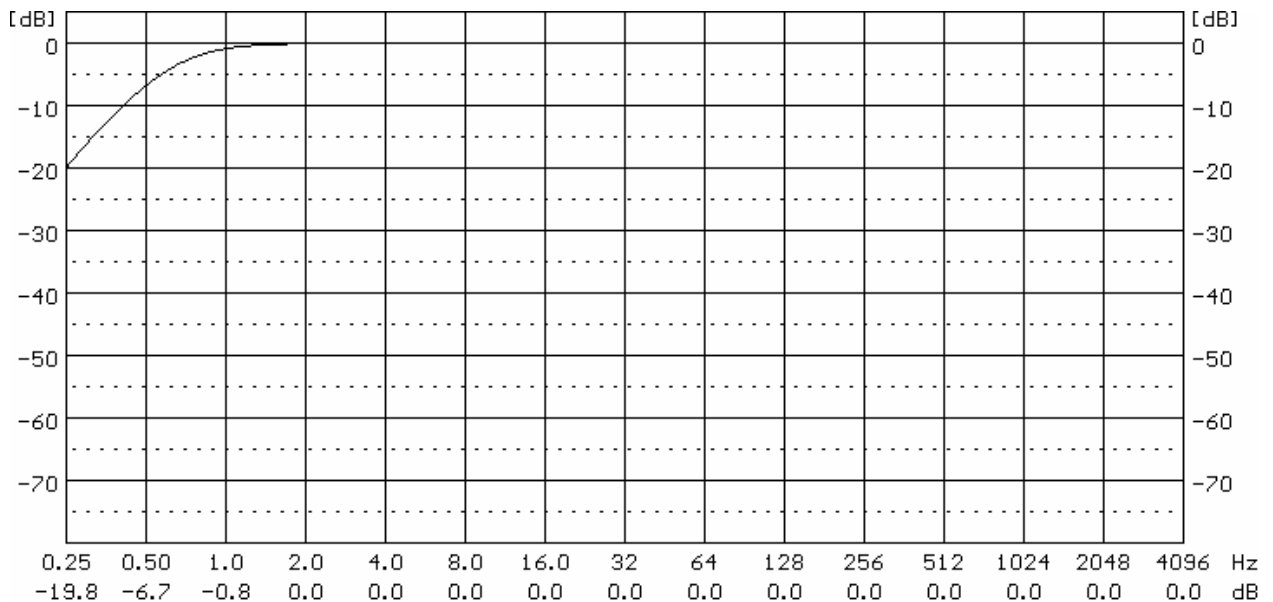
### D.2.2.1 Digital filters implemented in the vibration mode for the acceleration measurements

The weighting filters, which are available in vibration mode are selected in the MENU / INPUT / PROFILE (x) windows. The first three of them (**HP1**, **HP3**, and **HP10**) are dedicated for the acceleration measurements of the vibration signal in the different frequency ranges.



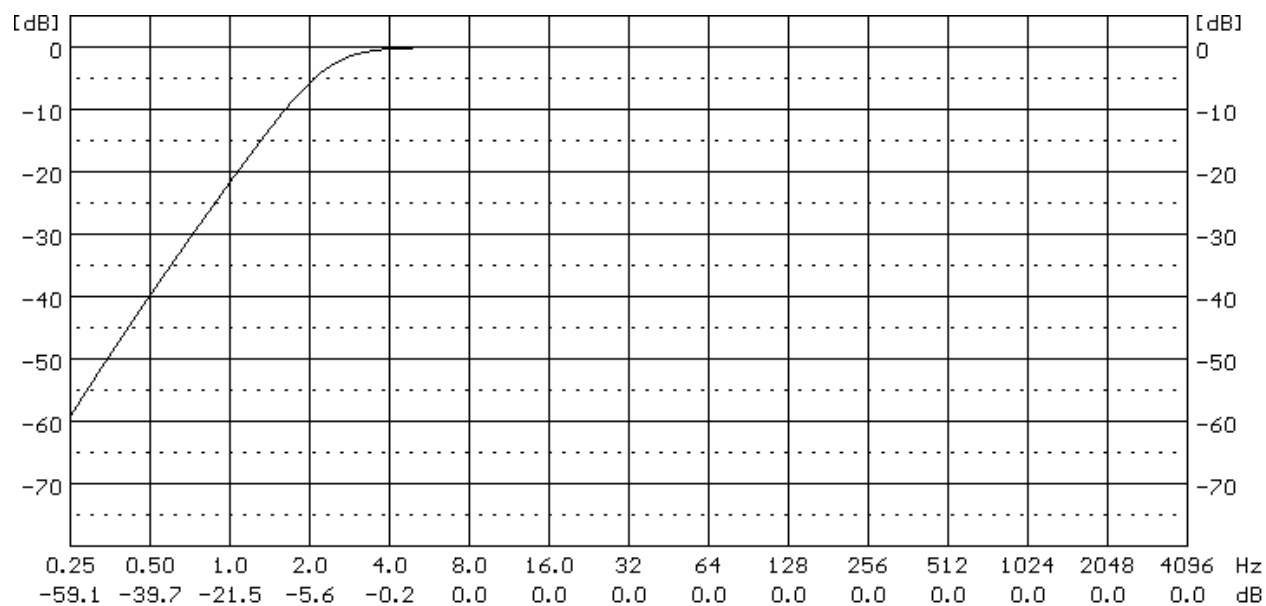
**INPUT and PROFILE (x) windows; weighting filter selection in acceleration measurements**

The **HP1** filter is used for the acceleration measurements (the vibration signal) in the frequency range from 1 Hz to 20 kHz.



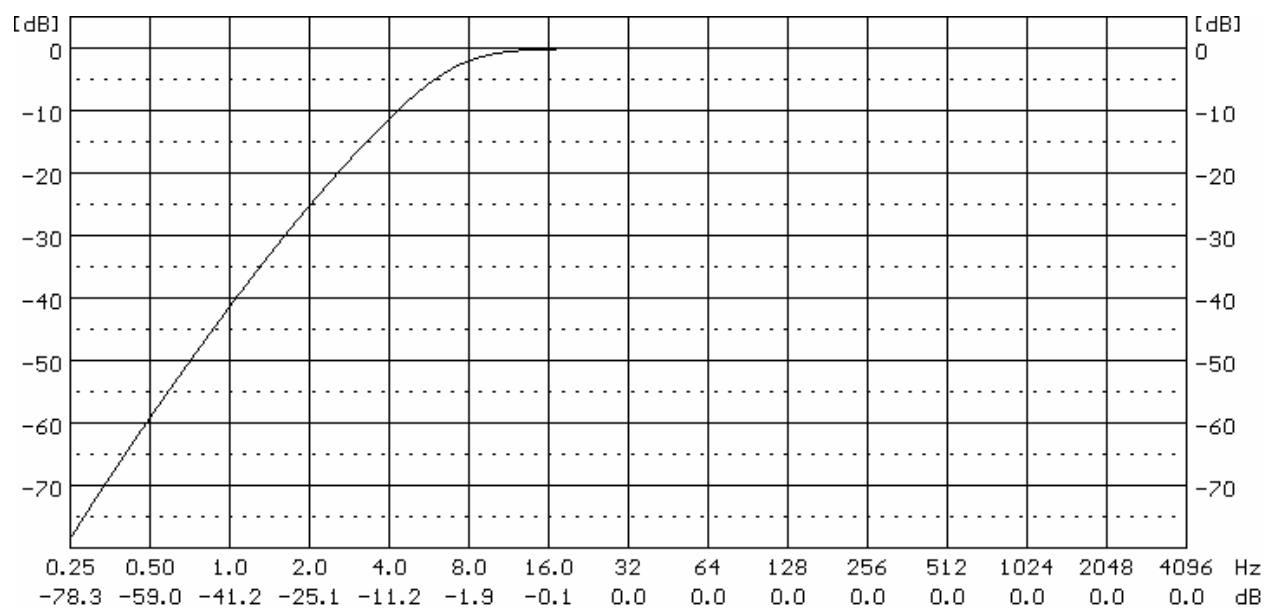
**Characteristics of the HP1 digital filter implemented for the acceleration measurements in the VM**

The **HP3** filter is used for the acceleration measurements (the vibration signal) in the frequency range from 3.5 Hz to 20 kHz.



**Characteristics of the HP3 digital filter implemented for the acceleration measurements in the VM**

The **HP10** filter is used for the acceleration measurements (the vibration signal) in the frequency range from 10 Hz to 20 kHz.



**Characteristics of the HP10 digital filter implemented for the acceleration measurements in the VM**



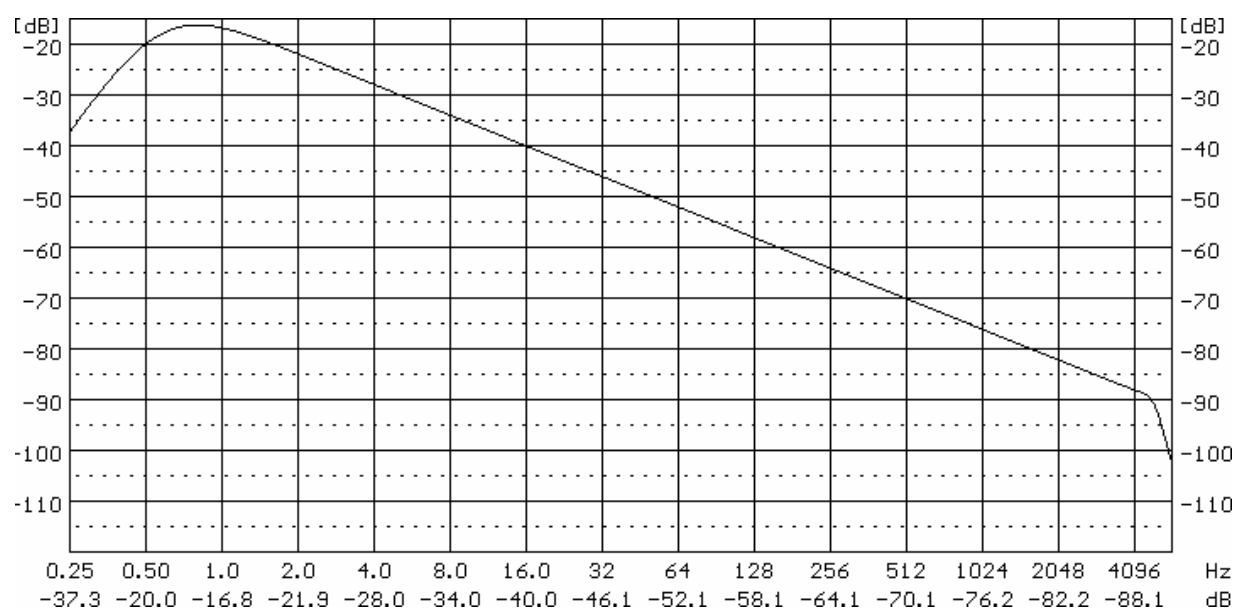
### D.2.2.2 Digital filters implemented in the vibration mode for the velocity measurements

The following four filters (**Vel1**, **Vel3**, **Vel10** and **VelMF**) are dedicated for the velocity measurements of the vibration signal in the different frequency ranges.

PROFILE(1)	PROFILE(1)	PROFILE(1)	PROFILE(1)
FILTER : <b>Vel1</b>	FILTER : <b>Vel3</b>	FILTER : <b>Vel10</b>	FILTER : <b>VelMF</b>
DETECTOR: 1.0s	DETECTOR: 1.0s	DETECTOR: 1.0s	DETECTOR: 1.0s
LOGGER PEAK : [ ]	LOGGER PEAK : [ ]	LOGGER PEAK : [ ]	LOGGER PEAK : [ ]
LOGGER P-P : [ ]	LOGGER P-P : [ ]	LOGGER P-P : [ ]	LOGGER P-P : [ ]
LOGGER MAX : [ ]	LOGGER MAX : [ ]	LOGGER MAX : [ ]	LOGGER MAX : [ ]
LOGGER RMS : [ ]	LOGGER RMS : [ ]	LOGGER RMS : [ ]	LOGGER RMS : [ ]

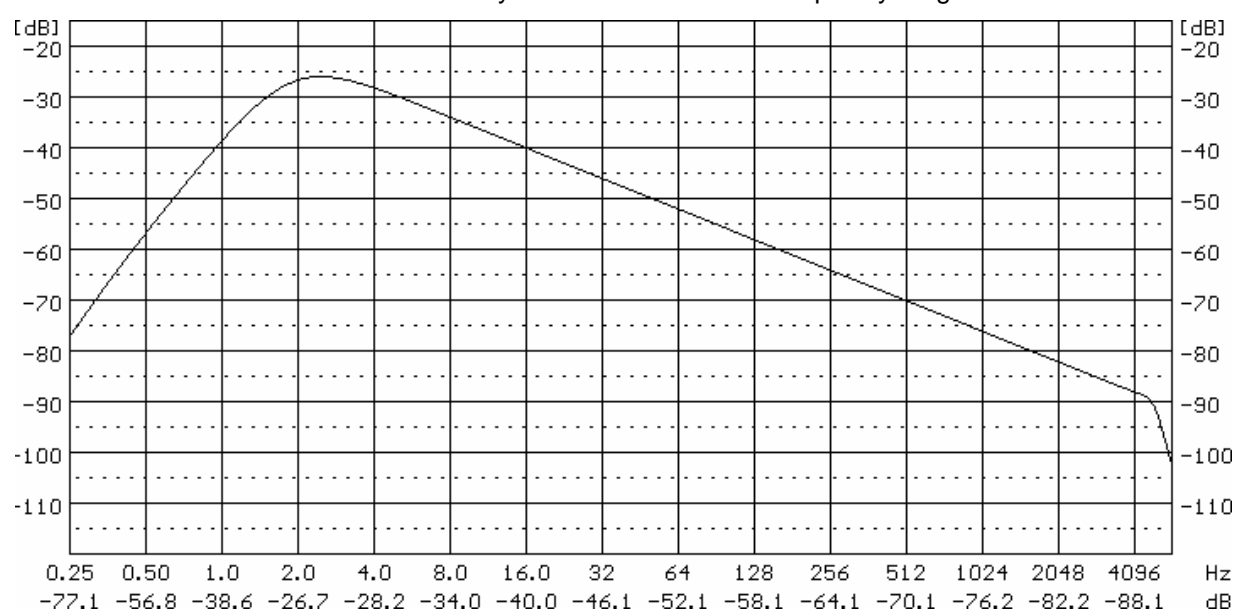
PROFILE(1) windows; the selection of the weighting filter in velocity measurements

The **Vel1** filter is used for the velocity measurements (the vibration signal) in the frequency range from 1 Hz to 20 kHz.



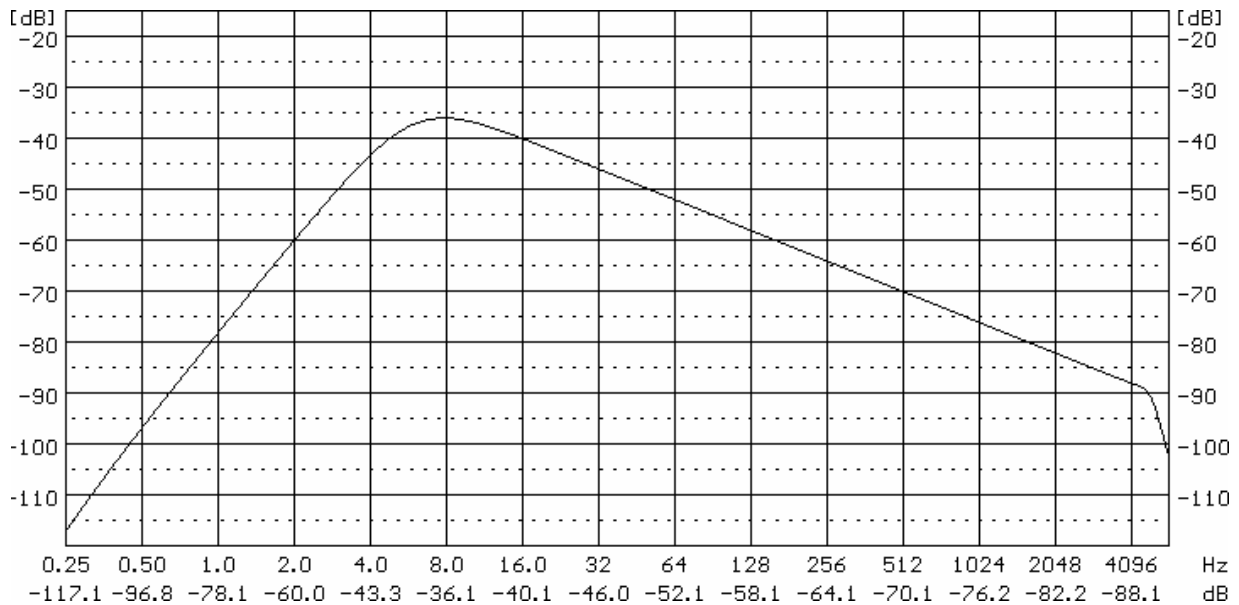
Characteristics of the Vel1 digital filter implemented for the velocity measurements in the VM

The **Vel3** filter is used for the velocity measurements in the frequency range from 1 Hz to 20 kHz.



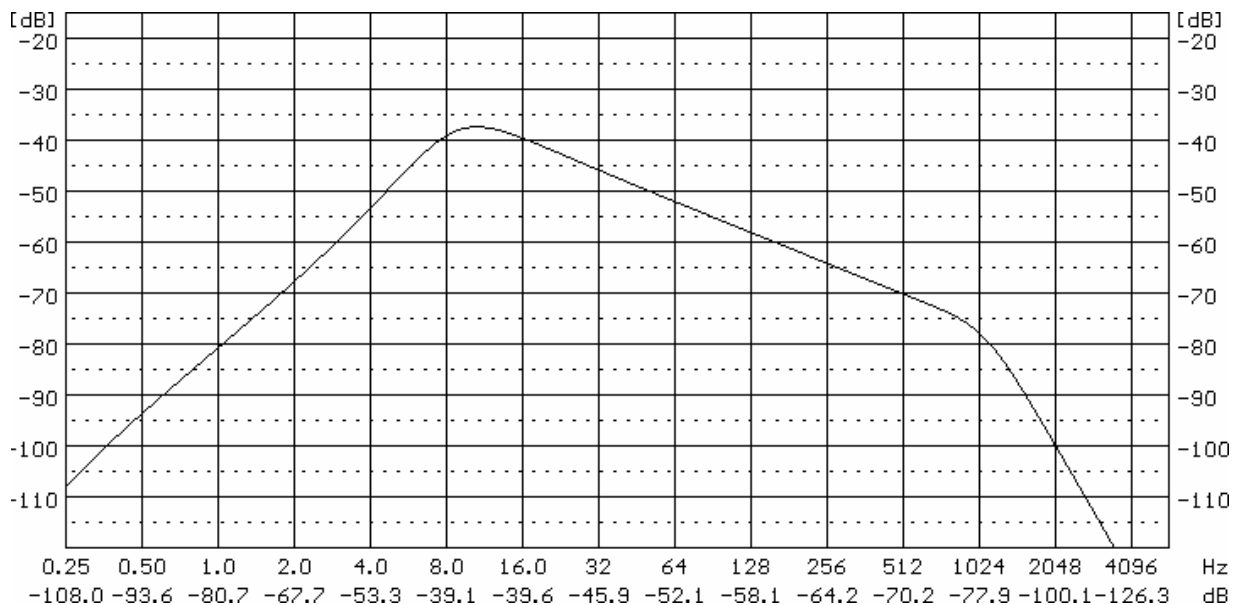
Characteristics of the Vel3 digital filter implemented for the velocity measurements in the VM

The **Vel10** filter is used for the velocity measurements in the frequency range from 1 Hz to 20 kHz.



**Characteristics of the Vel10 digital filter implemented for the velocity measurements in the VM**

The **VelMF** filter is used for the evaluation of the state of the machines. This filter is used for the measurements in the frequency range from 10 Hz to 1000 Hz and conforms to the ISO 10816 standard.



**Characteristics of the VelMF digital filter implemented for the velocity measurements in the VM**

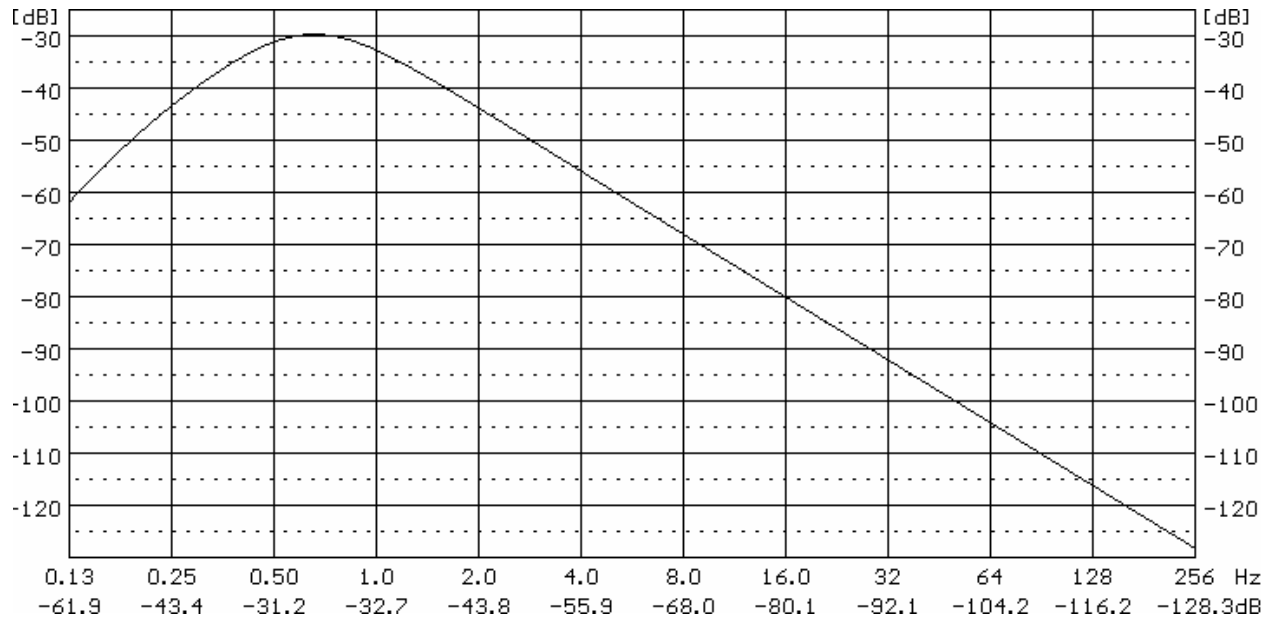
### D.2.2.3 Digital filters implemented in the vibration mode for the displacement measurements

The following three filters (**Dil1**, **Dil3** and **Dil10**) are dedicated for the displacement measurements of the vibration signal in the different frequency ranges.

PROFILE(1)	PROFILE(1)	PROFILE(1)
FILTER : <b>Dil1</b>	FILTER : <b>Dil3</b>	FILTER : <b>Dil10</b>
DETECTOR: 1.0s	DETECTOR: 1.0s	DETECTOR: 1.0s
LOGGER PEAK : [ ]	LOGGER PEAK : [ ]	LOGGER PEAK : [ ]
LOGGER P-P : [ ]	LOGGER P-P : [ ]	LOGGER P-P : [ ]
LOGGER MAX : [ ]	LOGGER MAX : [ ]	LOGGER MAX : [ ]
LOGGER RMS : [ ]	LOGGER RMS : [ ]	LOGGER RMS : [ ]

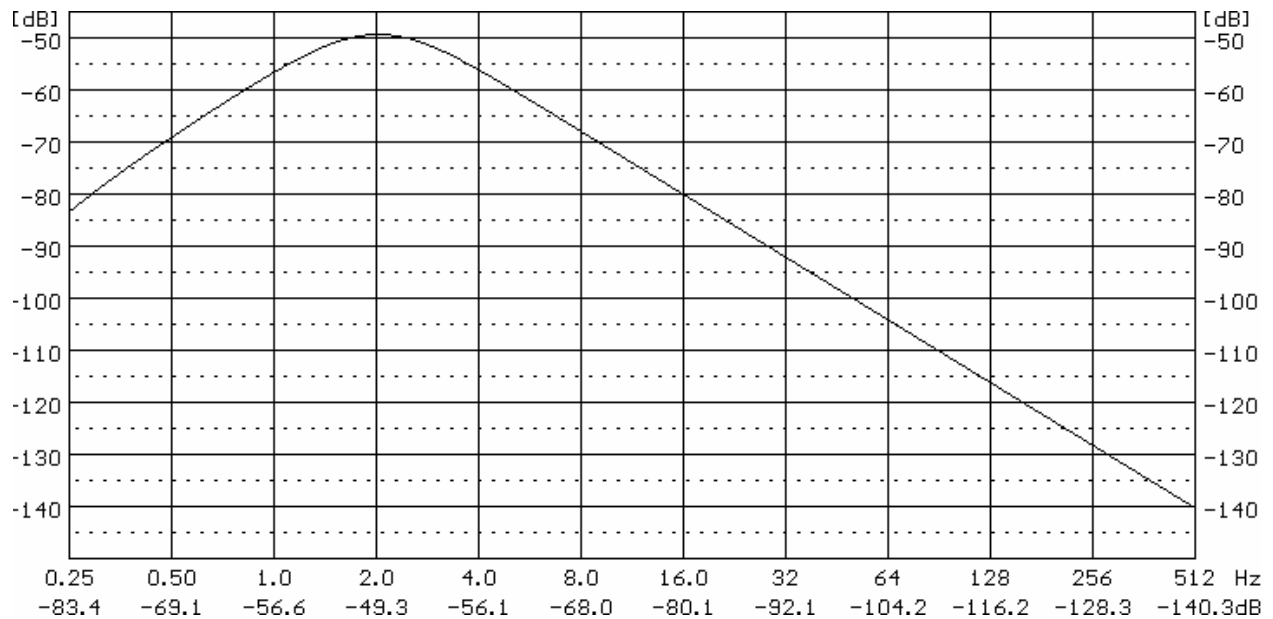
**PROFILE(1) windows; the selection of the weighting filter in displacement measurements**

The **Dil1** filter is used for the displacement measurements in the frequency range [1 Hz to 20 kHz].



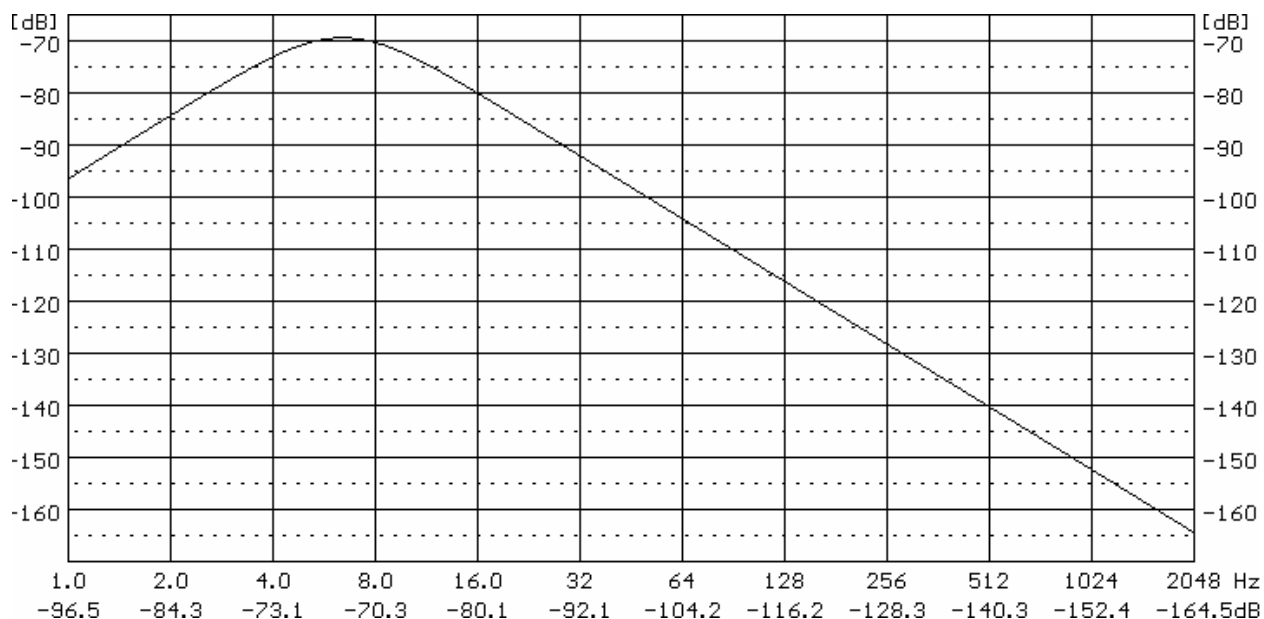
**Characteristics of the Dil1 digital filter implemented for the displacement measurements in the VM**

The **Dil3** filter is used for the displacement measurements in the frequency range [1 Hz to 20 kHz].



### Characteristics of the Dil3 digital filter implemented for the displacement measurements in the VM

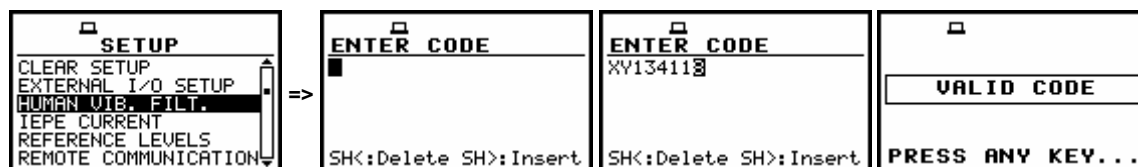
The **Dil10** filter is used for the displacement measurements in the frequency range [1 Hz to 20 kHz].



### Characteristics of the Dil10 digital filter implemented for the displacement measurements in the VM

#### D.2.2.4 Digital filters used in the HUMAN VIBRATION investigations

The **HUMAN VIBRATION FILTERS** are the optional feature of the **G7** instrument. They should be activated by the introduction of a special code, unique for the serial number of the meter. The mentioned code has to be input in the **ENTER CODE** window opened after pressing the **<ENTER>** push-button in the **SETUP** list with the **HUMAN VIB. FILT.** text selected.



SETUP and ENTER CODE windows; the activation of human vibration option

After the successful introduction of the activation code, the **HUMAN VIB. FILT.** text is removed from the **SETUP** list and will not be visible any more even after the upgrade of the internal software.



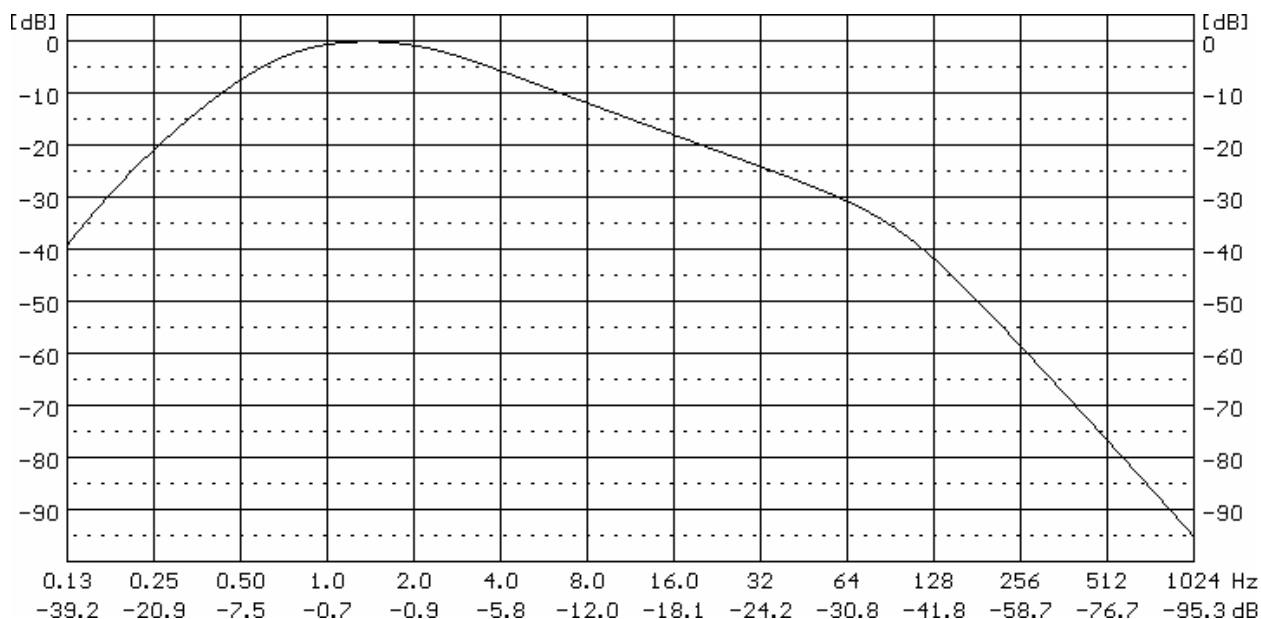
SETUP windows after the successful activation of human vibration option

In the **G7** instrument there are various filters conforming to old ISO 2631 and ISO 8041 (version dated as 1990-07-15) standards (**W-Bxy**, **W-Bz**, **H-A** and **W-Bc**), still used in certain countries for the assessment of the influence of the vibration signal on the human body. The mentioned above filters can be set in the same manner as other filters, in the **PROFILE (x)** windows.

PROFILE<1>	PROFILE<1>	PROFILE<1>	PROFILE<1>
FILTER : W-Bxy	FILTER : W-Bz	FILTER : H-A	FILTER : W-Bc
DETECTOR: 1.0s	DETECTOR: 1.0s	DETECTOR: 1.0s	DETECTOR: 1.0s
LOGGER PEAK : [ ]	LOGGER PEAK : [ ]	LOGGER PEAK : [ ]	LOGGER PEAK : [ ]
LOGGER P-P : [ ]	LOGGER P-P : [ ]	LOGGER P-P : [ ]	LOGGER P-P : [ ]
LOGGER MAX : [ ]	LOGGER MAX : [ ]	LOGGER MAX : [ ]	LOGGER MAX : [ ]
LOGGER RMS : [ ]	LOGGER RMS : [ ]	LOGGER RMS : [ ]	LOGGER RMS : [ ]

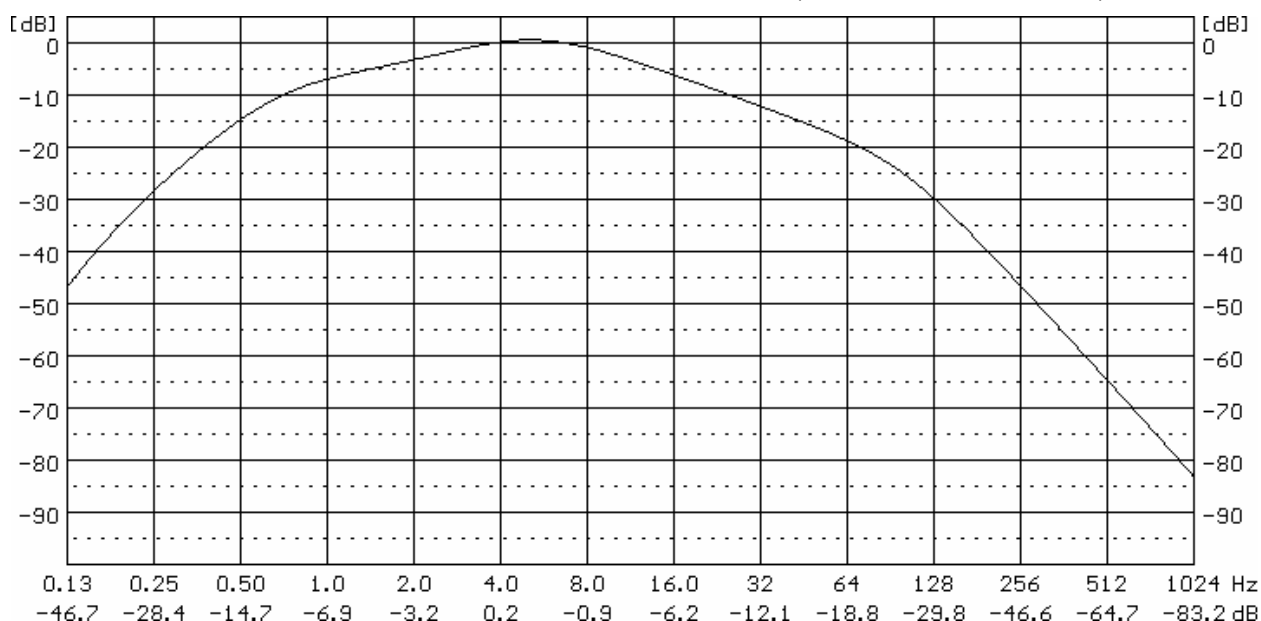
PROFILE(1) windows; the selection of old weighting filters in human vibration option

The mentioned above filters can be set in the same manner as the other filters, in the **PROFILE (x)** windows. The first one of them, the **W-Bxy** filter, is used for the assessment of the influence of the vibration signal on the human body in the horizontal direction. It conforms to the ISO 2631 and ISO 8041 (rev. dated as 1990-07-15) standards.



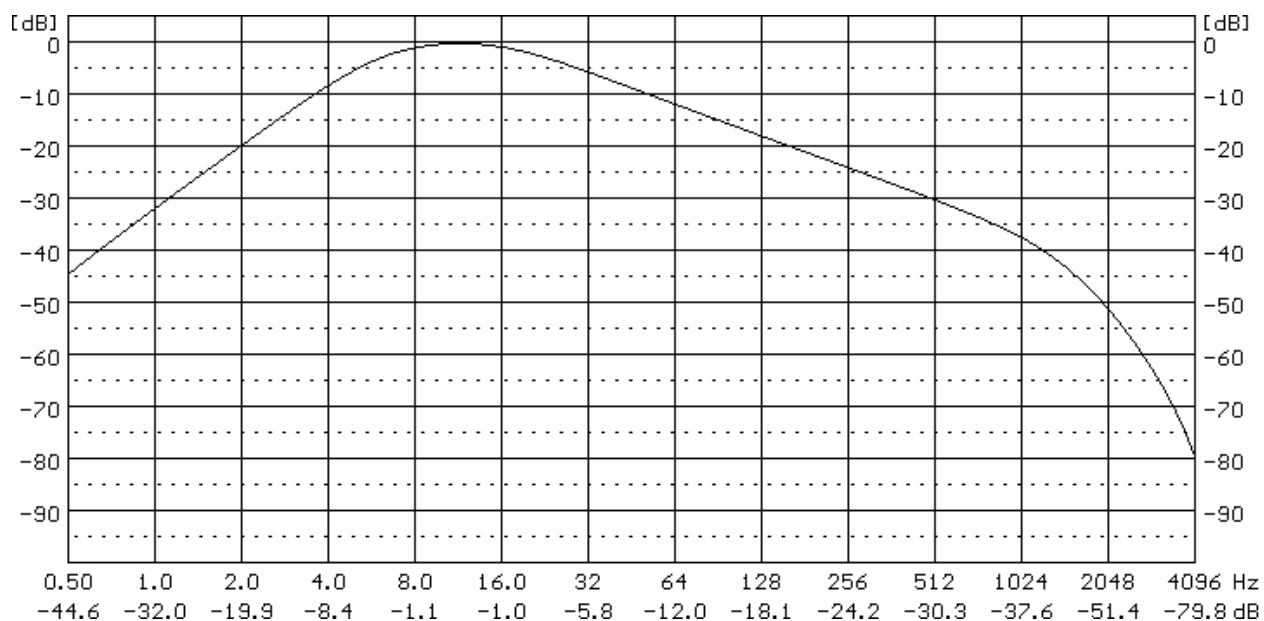
Characteristics of the W-Bxy digital filter implemented in the instrument in the VM

The **W-Bz** filter is used for the assessment of the vibration signal influence on the human body in the vertical direction. It conforms to the ISO 2631 and ISO 8041 (rev. dated as 1990-07-15) standards.



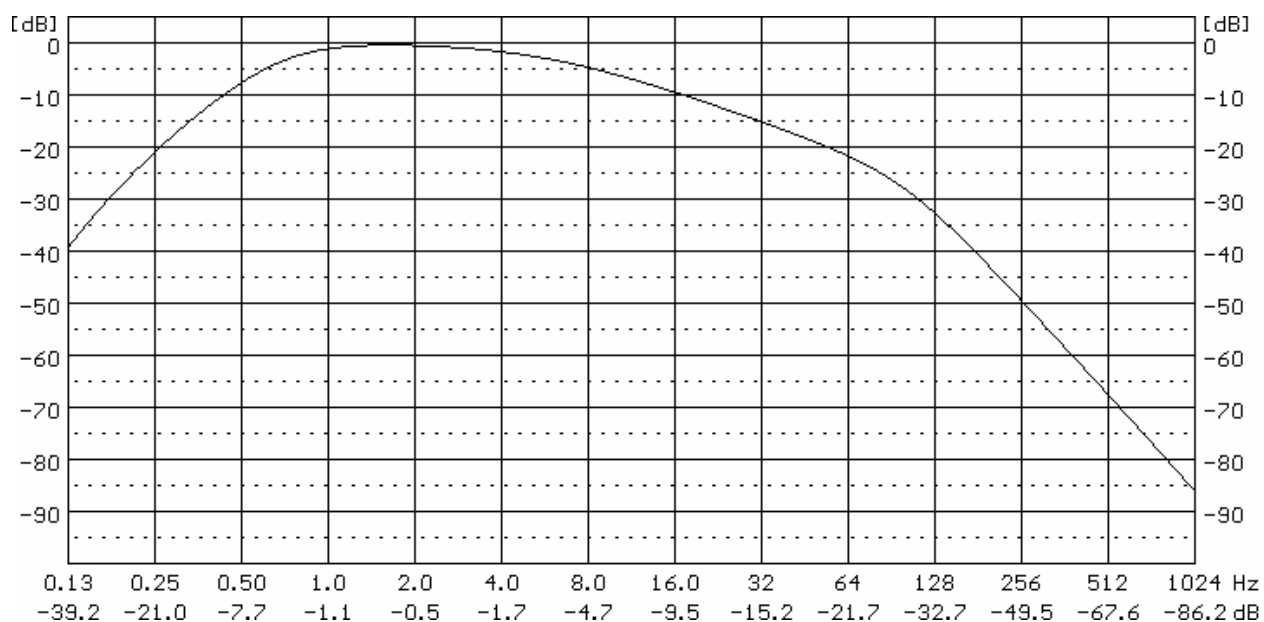
Characteristics of the W-Bz digital filter implemented in the instrument in the VM

The **H–A** filter is used for the assessment of the influence of the local vibration signal on the human body. It conforms to the ISO 2631 and ISO 8041 (rev. dated as 1990-07-15) standards.



**Characteristics of the H-A digital filter implemented in the instrument in the VM**

The **W–Bc** filter is used for the assessment of the influence of the vibration signal on the human body during the seat-back measurements. It conforms to the ISO 2631 and ISO 8041 (rev. dated as 1990-07-15) standards.



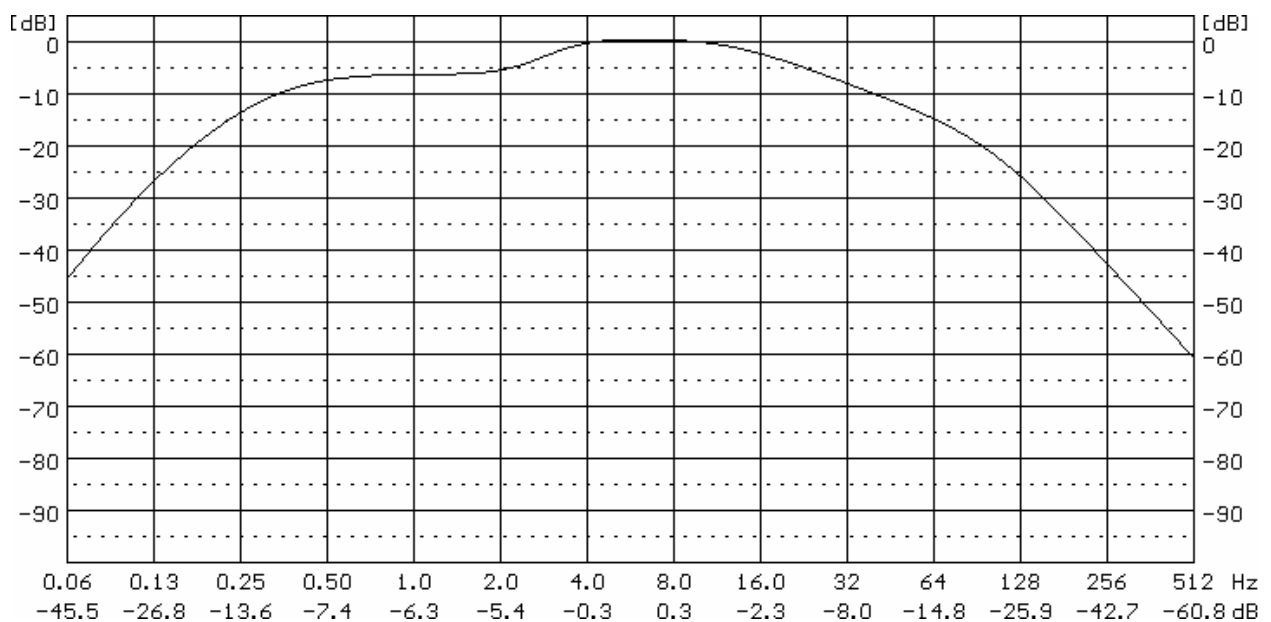
**Characteristics of the W-Bc digital filter implemented in the instrument in the VM**

In the **G7** instrument there are also various filters conforming to new ISO 2631-1-97 and ISO 8041 (revision dated as 1999-11-01) standards (**Wk**, **Wd**, **Wc**, **Wj**, **Wm**, **Wh**, **Wg** and **Wb**). They are currently used in many countries for the assessment of the influence of the vibration signal on the human body.

<b>PROFILE(1)</b> FILTER : <b>Wk</b> DETECTOR: 1.0s LOGGER PEAK : [ ] LOGGER P-P : [ ] LOGGER MAX : [ ] LOGGER RMS : [ ]	<b>PROFILE(1)</b> FILTER : <b>Wd</b> DETECTOR: 1.0s LOGGER PEAK : [ ] LOGGER P-P : [ ] LOGGER MAX : [ ] LOGGER RMS : [ ]	<b>PROFILE(1)</b> FILTER : <b>Wc</b> DETECTOR: 1.0s LOGGER PEAK : [ ] LOGGER P-P : [ ] LOGGER MAX : [ ] LOGGER RMS : [ ]	<b>PROFILE(1)</b> FILTER : <b>Wj</b> DETECTOR: 1.0s LOGGER PEAK : [ ] LOGGER P-P : [ ] LOGGER MAX : [ ] LOGGER RMS : [ ]
<b>PROFILE(1)</b> FILTER : <b>Wm</b> DETECTOR: 1.0s LOGGER PEAK : [ ] LOGGER P-P : [ ] LOGGER MAX : [ ] LOGGER RMS : [ ]	<b>PROFILE(1)</b> FILTER : <b>Wh</b> DETECTOR: 1.0s LOGGER PEAK : [ ] LOGGER P-P : [ ] LOGGER MAX : [ ] LOGGER RMS : [ ]	<b>PROFILE(1)</b> FILTER : <b>Wg</b> DETECTOR: 1.0s LOGGER PEAK : [ ] LOGGER P-P : [ ] LOGGER MAX : [ ] LOGGER RMS : [ ]	<b>PROFILE(1)</b> FILTER : <b>Wb</b> DETECTOR: 1.0s LOGGER PEAK : [ ] LOGGER P-P : [ ] LOGGER MAX : [ ] LOGGER RMS : [ ]

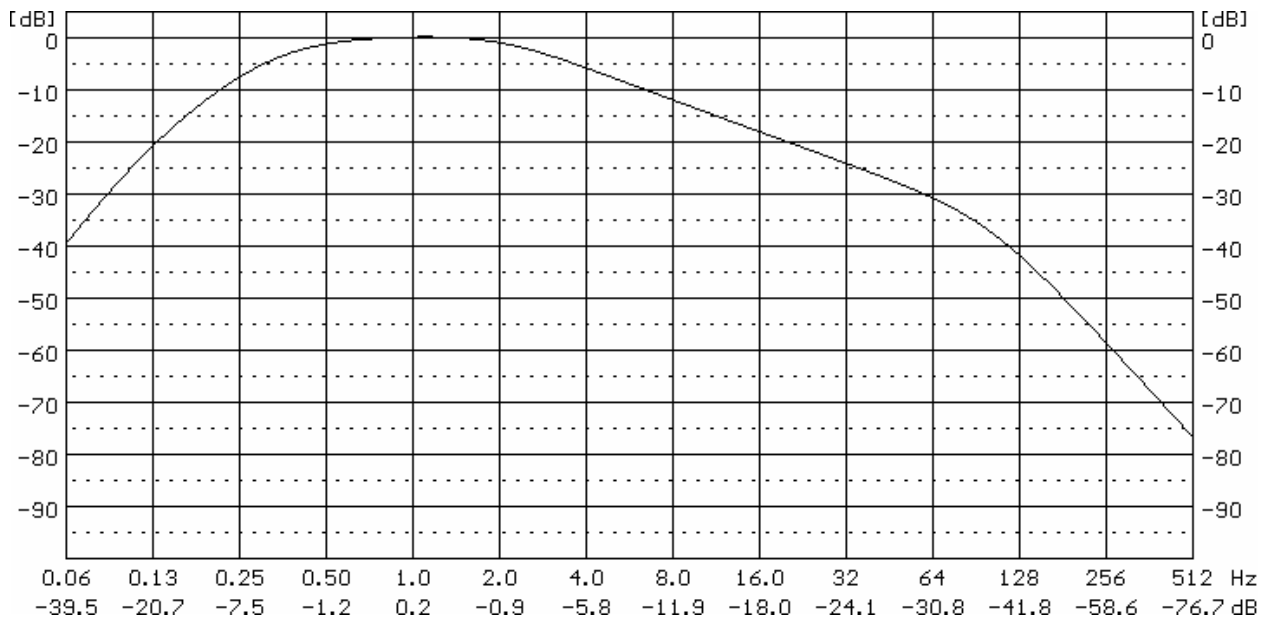
**PROFILE(1) windows; the selection of new weighting filters in human vibration option**

The mentioned above filters can be set in the same manner as other filters, in the **PROFILE (x)** windows. The **Wk** filter is used for the assessment of the influence of the vibration signal on the human body in the **z** direction and for vertical recumbent direction. It conforms to the ISO 2631-1-97 and ISO 8041 (revision dated as 1999-11-01) standards.



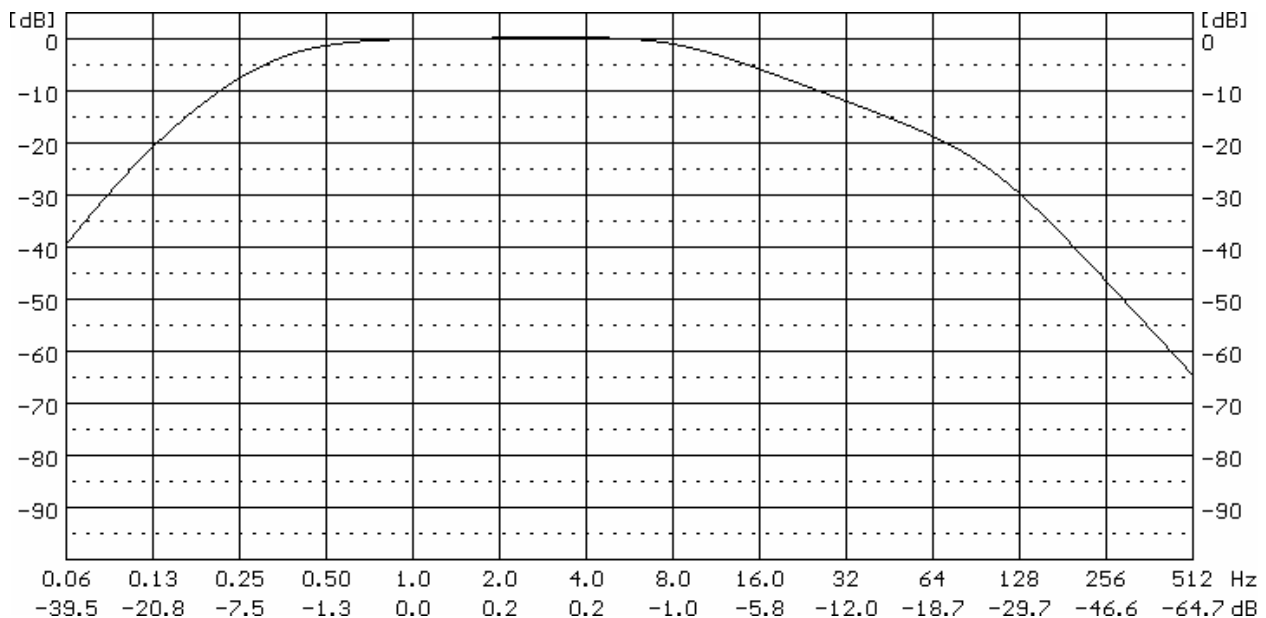
**Characteristics of the Wk digital filter implemented in the instrument in the HVM**

The **Wd** filter is used for the assessment of the influence of the vibration signal on the human body in the x and y directions and for horizontal recumbent direction. It conforms to the ISO 2631-1-97 and ISO 8041 (revision dated as 1999-11-01) standards.



**Characteristics of the Wd digital filter implemented in the instrument in the HVM**

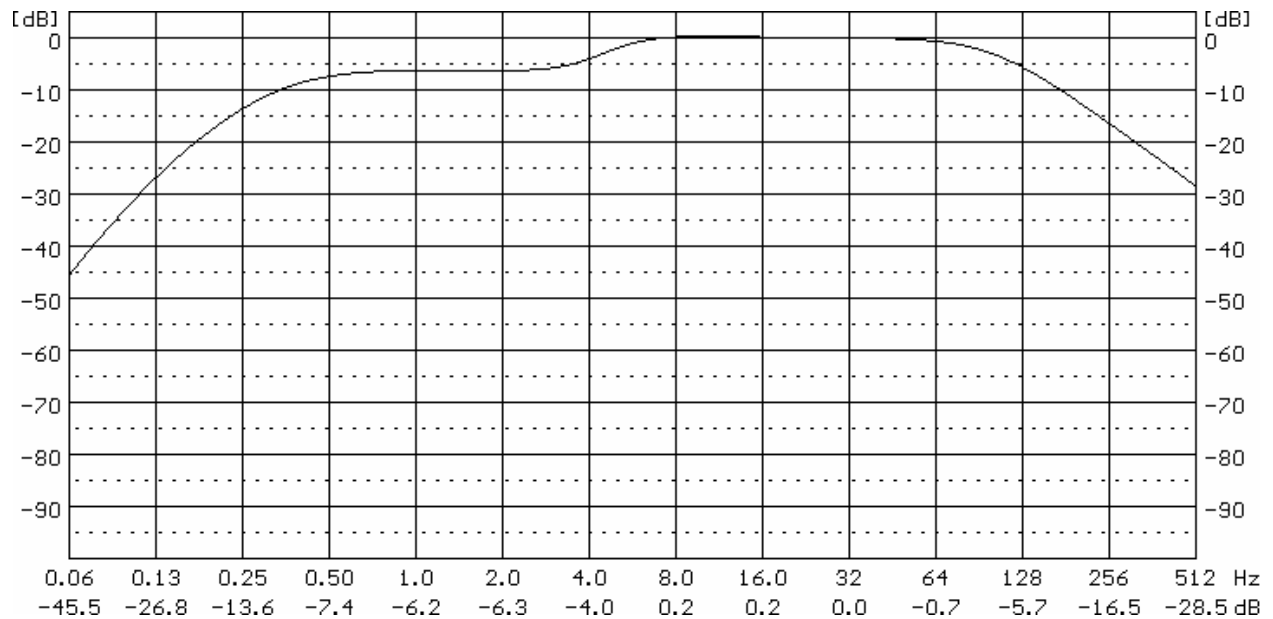
The **Wc** filter is used for the assessment of the influence of the vibration signal on the human body during the seat-back measurements. It conforms to the ISO 2631-1-97 and ISO 8041 (revision dated as 1999-11-01) standards.



**Characteristics of the Wc digital filter implemented in the instrument in the HVM**

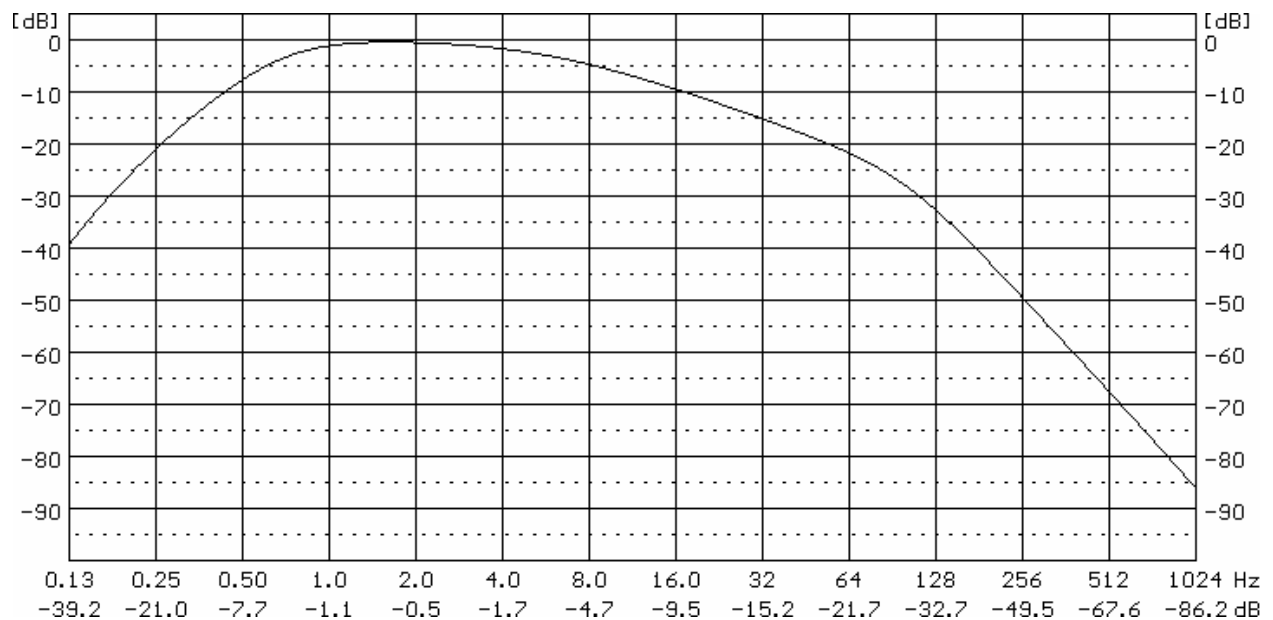


The **Wj** filter is used for the assessment of the influence of the vibration signal under the head of the recumbent person. It conforms to the ISO 2631-1-97 and ISO 8041 (revision dated as 1999-11-01) standards.



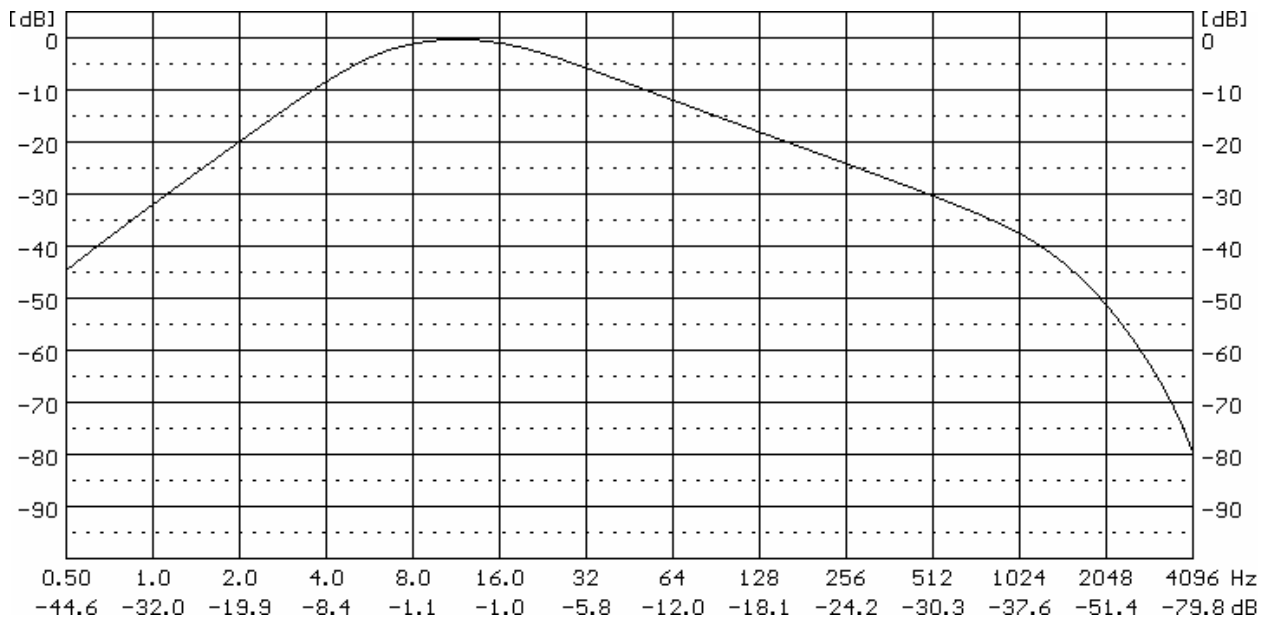
**Characteristics of the Wj digital filter implemented in the instrument in the HVM**

The **Wm** filter is used for the assessment of the influence of the vibration signal on the human body. It conforms to the ISO 2631-1-97 and ISO 8041 (revision dated as 1999-11-01) standards.



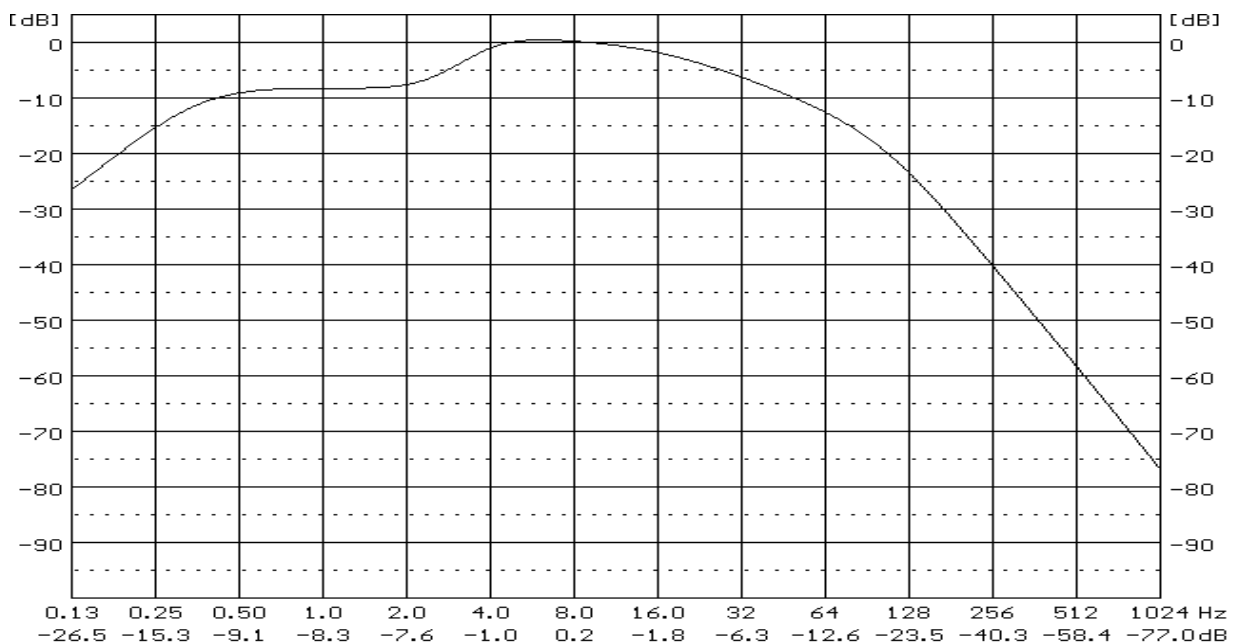
**Characteristics of the Wm digital filter implemented in the instrument in the HVM**

The **Wh** filter is used for the assessment of the influence of the vibration signal on the human body. It conforms to the ISO 2631-1-97 and ISO 8041 (revision dated as 1999-11-01) standards.



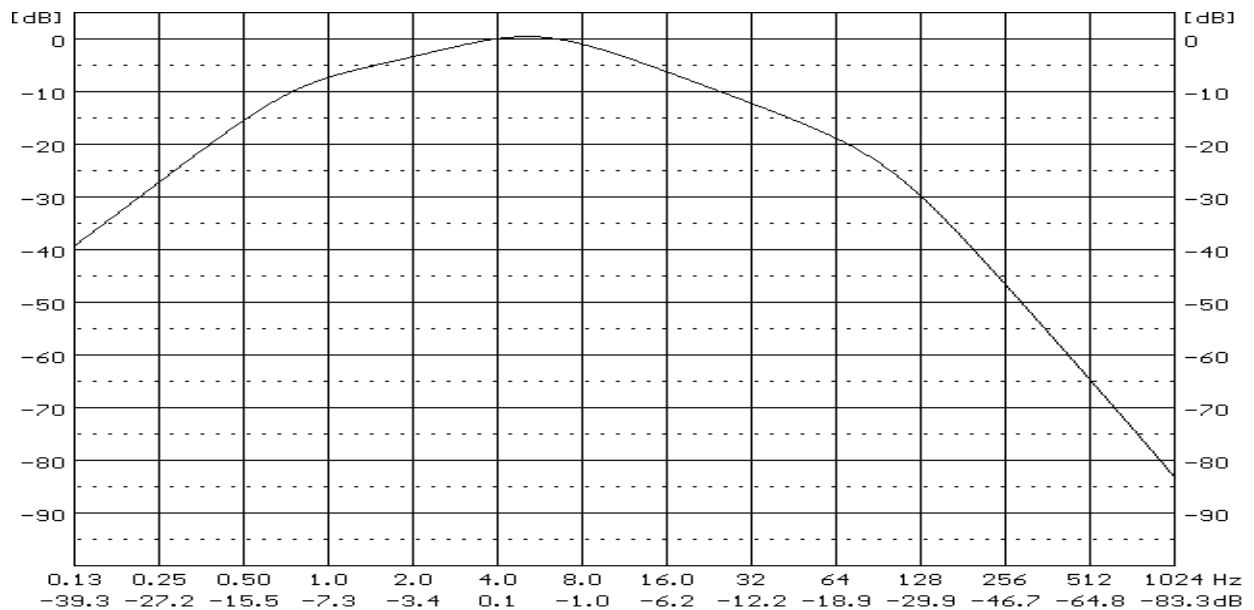
**Characteristics of the Wh digital filter implemented in the instrument in the HVM**

The **Wg** filter is used for the assessment of the influence of the vibration signal on the human body. It conforms to the BS 6841:1987 standard.



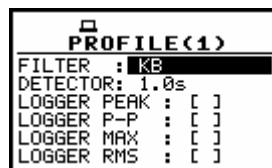
**Characteristics of the Wg digital filter implemented in the instrument in the HVM**

The **Wb** filter is used for the assessment of the influence of the vibration signal on the human body. It conforms to the ISO/FDIS 8041:2004(E) standard.



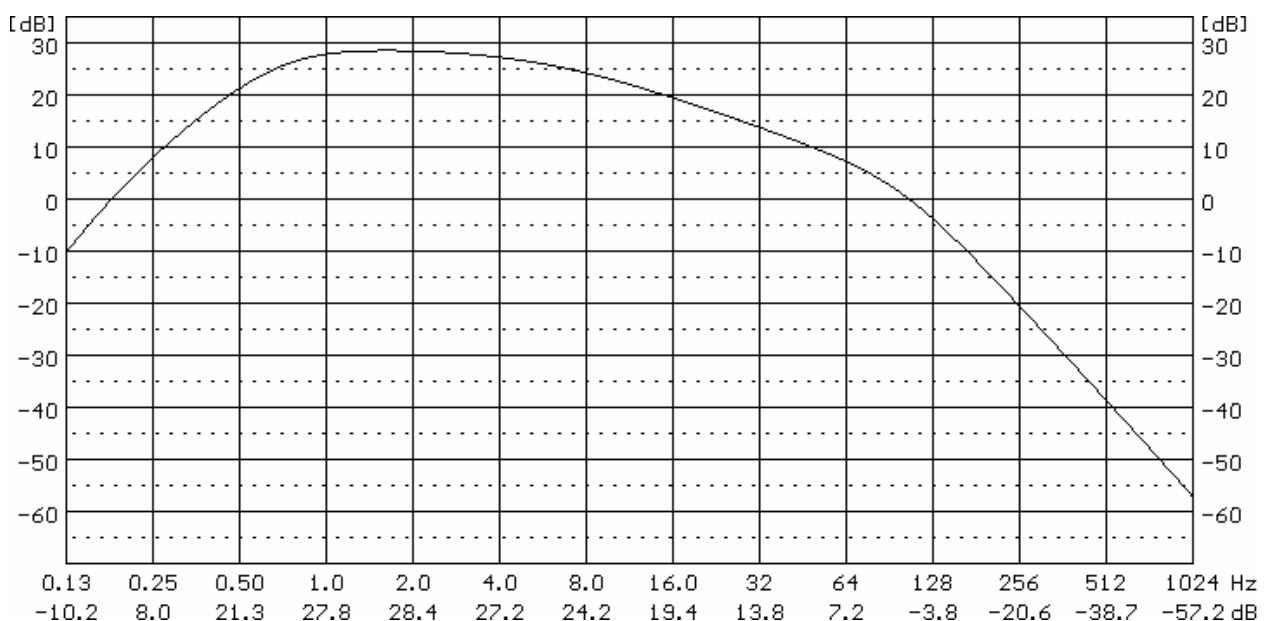
Characteristics of the Wb digital filter implemented in the instrument in the HVM

#### D.2.2.4 Digital filter used for vibration measurements on ships



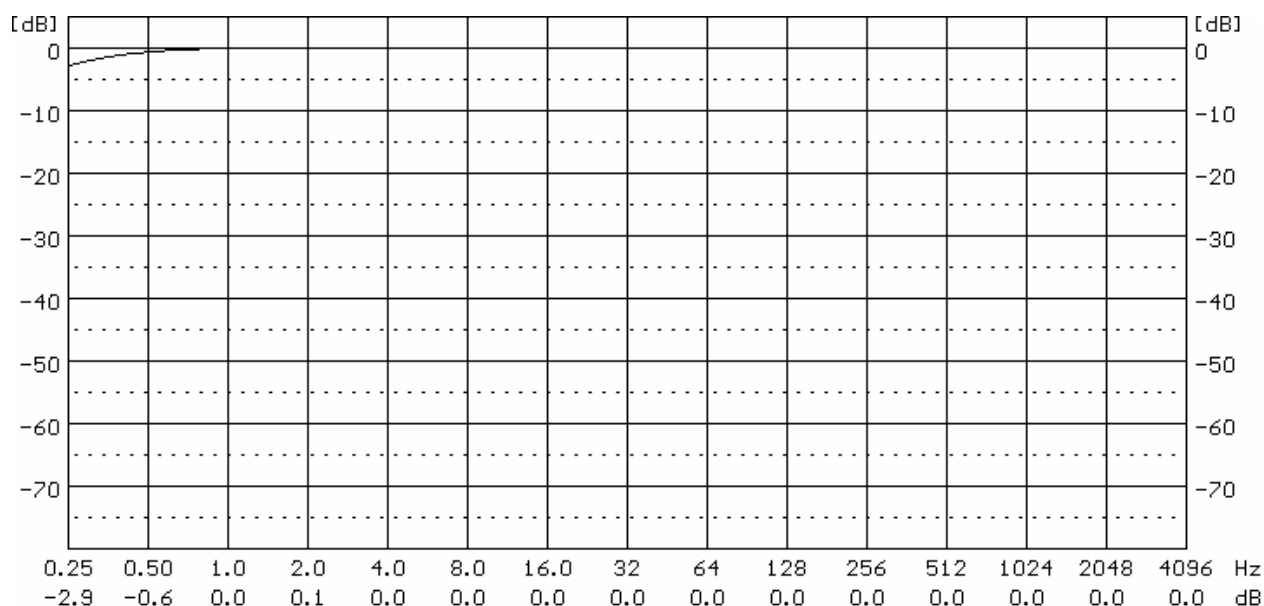
PROFILE(1) window; the selection of the KB filter

The **KB** filter is used for the vibration measurements on ships. Its characteristics, presented below, is taken from the formulae:  $KB = W - Bc + 28.9 \text{ dB}$ .



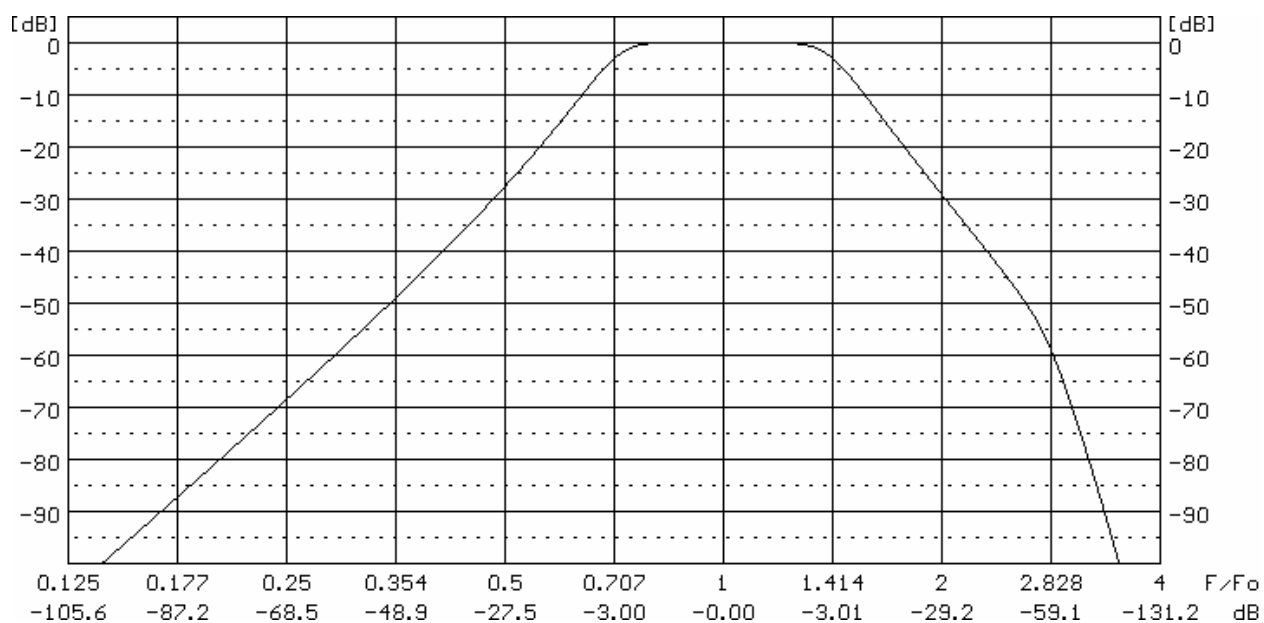
Characteristics of the KB digital filter implemented in the instrument in the VM

### D.2.3 Digital HP filter implemented in 1/1 & 1/3 OCTAVE and FFT analysis

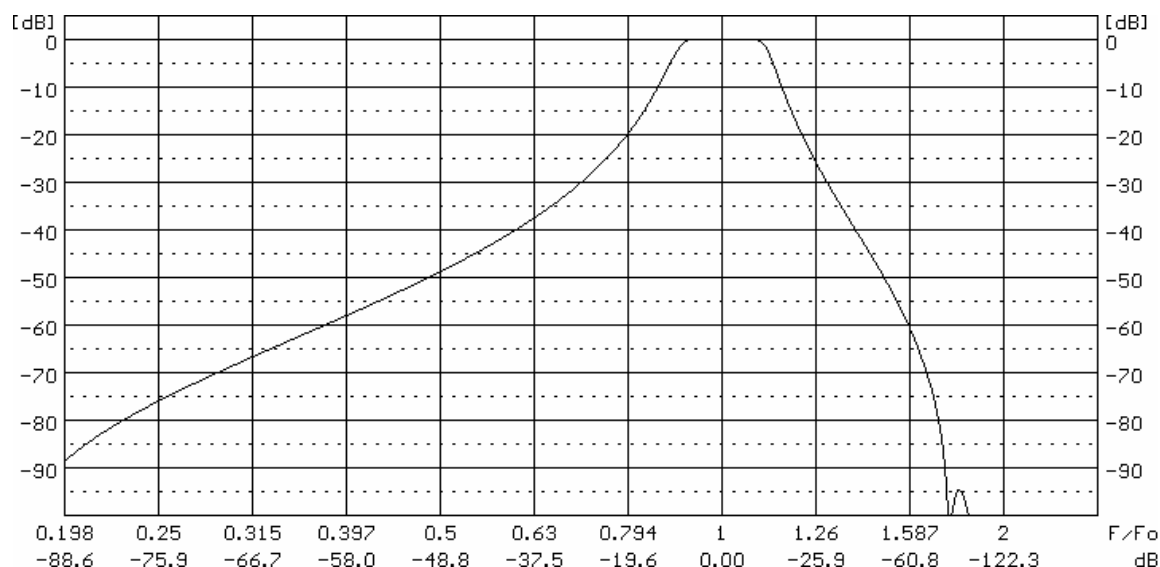


Characteristics of the HP digital filter implemented in the instrument in 1/1 OCTAVE, 1/3 OCTAVE and FFT analysis

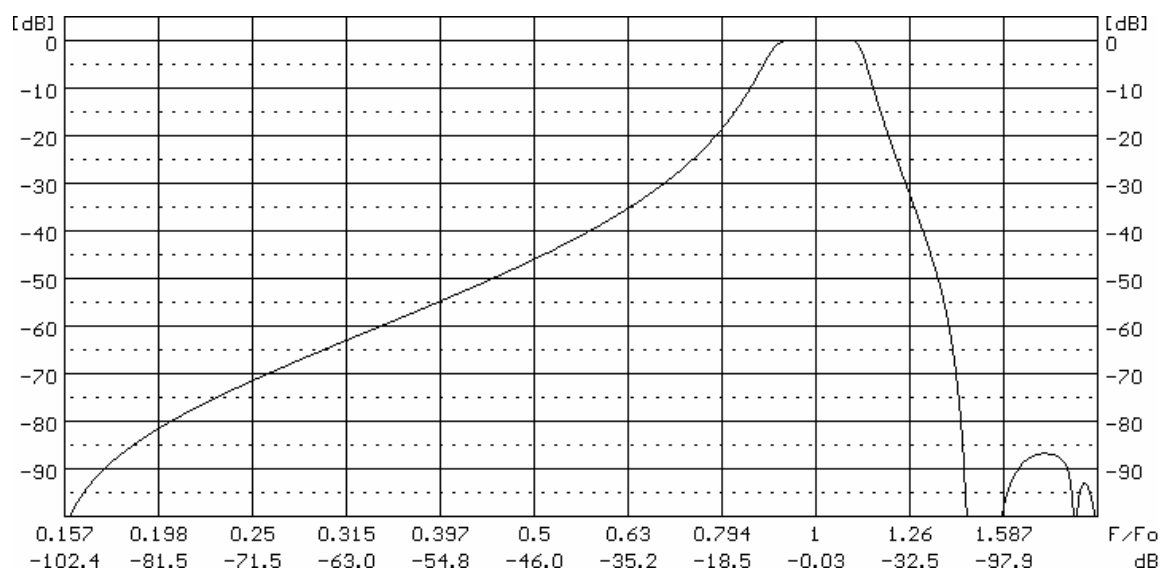
### D.2.4 Digital 1/1 OCTAVE and 1/3 OCTAVE filters implemented in the G7



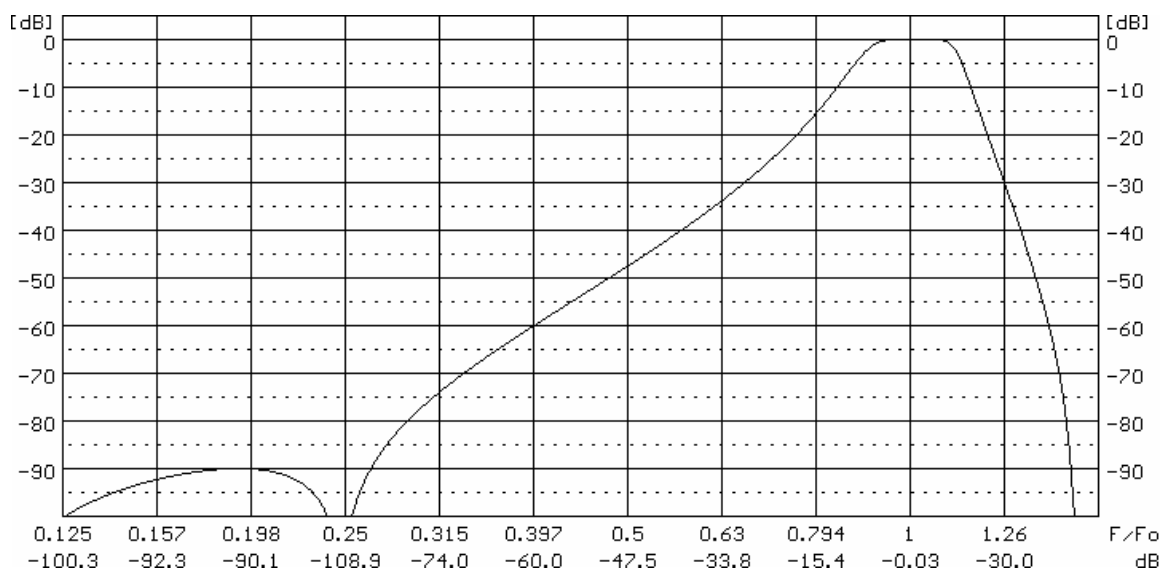
Characteristics of the exemplary digital 1/1 OCTAVE filter implemented in the instrument



**Characteristics of the exemplary lower digital 1/3 OCTAVE filter implemented in the instrument**



**Characteristics of the exemplary middle digital 1/3 OCTAVE filter implemented in the instrument**



**Characteristics of the exemplary upper digital 1/3 OCTAVE filter implemented in the instrument**